



R-DPA96 A/AN

DIGITAL POWER ANALYSER

MAIN CONTENTS

Main Module

DANGER AND WARNING	4
PRELIMINARY OPERATIONS	4
PRESENTATION	5
INSTALLATION	5
PROGRAMMING	9
OPERATION	24
CONNECTION TEST FUNCTION	29
ASSISTANCE	32
TECHNICAL CHARACTERISTICS	33
GLOSSARY OF ABBREVIATIONS	35

Module 1 kWh - kvarh - kVAh

PRELIMINARY OPERATIONS	36
PRESENTATION	36
INSTALLATION	37
PROGRAMMING	38
TECHNICAL CHARACTERISTICS	42
GLOSSARY OF ABBREVIATIONS	42

Module 2 kWh - kvarh - kVAh Harmonics

PRELIMINARY OPERATIONS	45
PRESENTATION	45
INSTALLATION	46
PROGRAMMING	47
OPERATION	51
TECHNICAL CHARACTERISTICS	52
GLOSSARY OF ABBREVIATIONS	52

Module 3 RS485 - JBUSMODBUS

PRELIMINARY OPERATIONS	55
GENERAL INFORMATION	56
INSTALLATION	57
CONNECTION	57
PROGRAMMING	58
COMMUNICATION ADDRESS	59
COMMUNICATION SPEED	59
COMMUNICATION PARITY	60
COMMUNICATION STOP BIT	60
COMMUNICATION	61
THE STANDARD COMMUNICATIONS FRAME	61
LIST OF PARAMETERS TO BE DISPLAYED	62
Table of values with allocated current and voltage winding ratios on 2 words	62
Address available with the Monitoring or Control/Command option	63
Instant value display	64
Table of values without allocated current and voltage winding ratios on 1 word	65
Alarm event log	81
Table of current and voltage harmonics	82
Option recognition table	85

Module 3
RS485 - JBUS/MODBUS

LIST OF PARAMETERS TO BE DISPLAYED OR PROGRAMMED	86
RESET TO ZERO: ENERGY METERS AND MAX. VALUES	95
SAVED COMMAND	96
PULSE METERS VALUES	96
DATE AND HOUR SETTINGS	97
LAST 10 ALARMS EVENT LOG	97
LAST 10 VOLTAGE DIPS EVENT LOG / SAG	111
LAST 10 VOLTAGE SURGE EVENT LOG / SWELL	116
MINIMUM AND MAXIMUM INSTANTANEOUS VALUES	121
LAST 10 VOLTAGE CUT-OFFS EVENT LOG / SAG	125
MEAN POWER EVENT LOG	127
MEAN VOLTAGE EVENT LOG	127
MEAN FREQUENCY EVENT LOG	127
TECHNICAL CHARACTERISTICS	128
GLOSSARY OF ABBREVIATIONS	128

Module 4
Outputs 0/4 - 20mA

PRELIMINARY OPERATIONS	131
PRESENTATION	131
INSTALLATION	132
PROGRAMMING	133
TECHNICAL CHARACTERISTICS	138
GLOSSARY OF ABBREVIATIONS	138

Module 5
2Inputs / 2 outputs

PRELIMINARY OPERATIONS	141
PRESENTATION	141
INSTALLATION	142
PROGRAMMING	144
OPERATION	150
TECHNICAL CHARACTERISTICS	151
GLOSSARY OF ABBREVIATIONS	151

Module 3+6
Profibus

PLEASE CONSULT US

Module 7
Memory

PRELIMINARY OPERATIONS	153
PRESENTATION	154
INSTALLATION	155
PROGRAMMING	156
OPERATION	168
TECHNICAL CHARACTERISTICS	169
GLOSSARY OF ABBREVIATIONS	168

DANGER AND WARNING

This equipment must be mounted only by professionals. The manufacturer shall not be held responsible for failure to comply with the instructions in this manual.

Risk of electrocution, burns or explosion

- the device must be installed and serviced only by qualified personnel
- prior to any work on or in the device, isolate the voltage inputs and auxiliary power supplies and short-circuit the secondary winding of all current transformers (PTI RUDOLF)
- always use an appropriate voltage detection device to confirm the absence of voltage
- put all mechanisms, door and covers back in place before energising the device
- always supply the device with the correct rated voltage

Failure to take these precautions could cause serious injuries.

Risk of damaging device

Check the following:

- the voltage of the auxiliary power
- the frequency of the distribution system (50 or 60 Hz)
- the maximum voltage across the voltage-input terminals, (V1, V2, V3 and VN) 700 V AC phase-to-phase or 400 V AC phase-to-neutral
- a maximum current of 20 A on the current-input terminals (I1, I2 and I3)

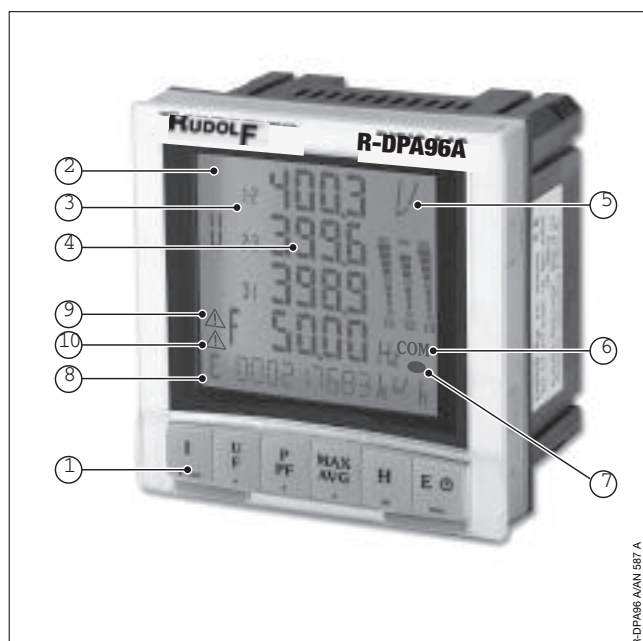
PRELIMINARY OPERATIONS

For personnel and product safety please read the contents of these operating instructions carefully before connecting.

Check the following points as soon as you receive the **R-DPA96 A/AN** package:

- the packing is in good condition,
- the product has not been damaged during transit,
- the product reference number conforms to your order,
- the package contains the product fitted with a pull-out terminal block,
- operating instructions.

PRESENTATION



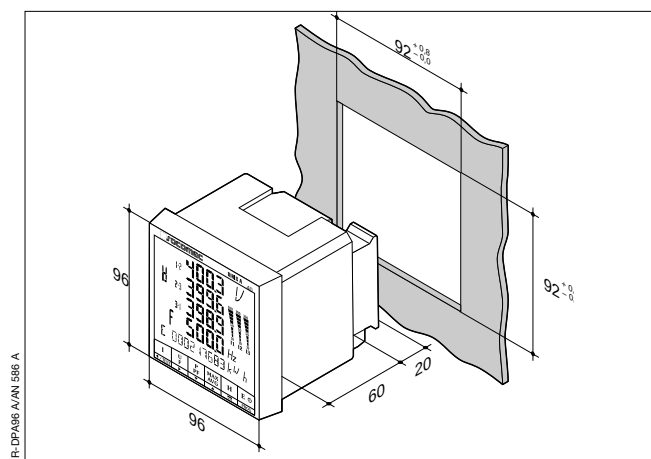
1. Key-pad with 6 dual-function keys (display or programming)
2. Backlit LCD display
3. Phase
4. Values
5. Unit
6. Activity indicator on the communication bus
7. Energy metering indication
8. Hour meter and energy display
9. Alarm relay 1
10. Alarm relay 2

INSTALLATION

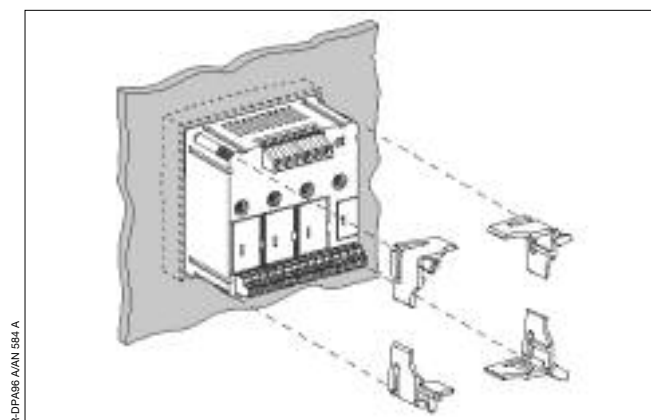
RECOMMANDATIONS

- avoid proximity to systems which generate electromagnetic interference,
- avoid vibrations with accelerations in excess of 1 g for frequencies below 60 Hz.

CUT-OUT DIAGRAMM



MOUNTING

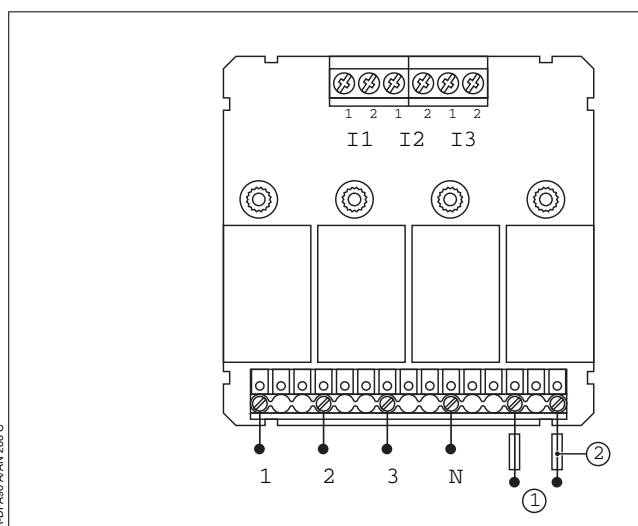


CONNECTION

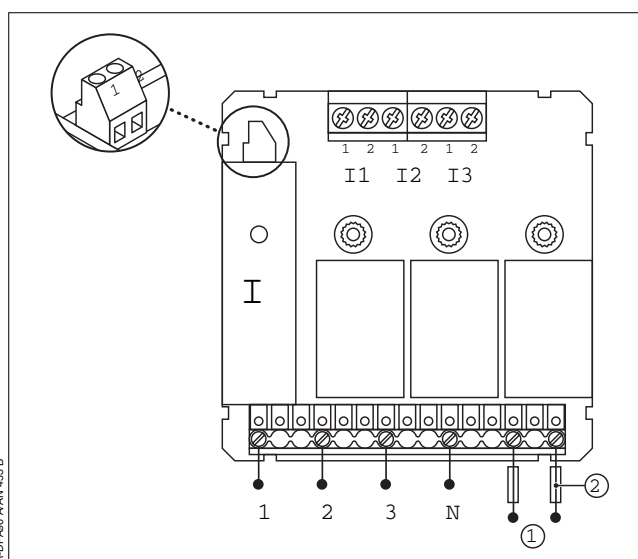
The maximum coupling torque for each screw is 0.4 Nm.

Each CT's secondary winding must be short-circuited when disconnecting the R-DPA96 A/AN is can be done automatically using one of Socomec's catalogue products: the PTI. Please contact us for further information.

- ① Aux.: 110 ... 400 V AC
120 ... 350 V DC
12 ... 48 V DC
- ② Fus.: 0.5 A gG / BS 88 2A gG / 0.5 A class CC



R-DPA96 A



R-DPA96 AN

OPTIONAL MODULES

The R-DPA96 A/AN can be fitted with optional modules:

- **JBUS/MODBUS communication;**

ref: R-MODULE 3:

RS485 JBUS/MODBUS serial port in RTU mode with a speed from 2400 to 38400 baud. (User manual ref: CDR 27 028)

- **PROFIBUS-DP Communication;**

ref: R-MODULE 3+6:

RS485 PROFIBUS-DP serial port with a speed from 9,600 baud to 1.5 Mbaud. (User manual ref: CDR 18 021)

- **Pulse outputs; ref: R-MODULE 1:**

2 pulse outputs connected to the metering of energy in kWh, kvarh and KVAh (User manual ref: 876 584)

- **Harmonic and pulse outputs; ref: R-MODULE 2:**

2 pulse outputs connected to the metering of energy in kWh, kvarh and KVAh. Analysis of the harmonic spectrum in current and voltage in rows and in phases up to row 25 (User manual ref: 876 585)

- **Analogue outputs; ref: R-MODULE 4:**

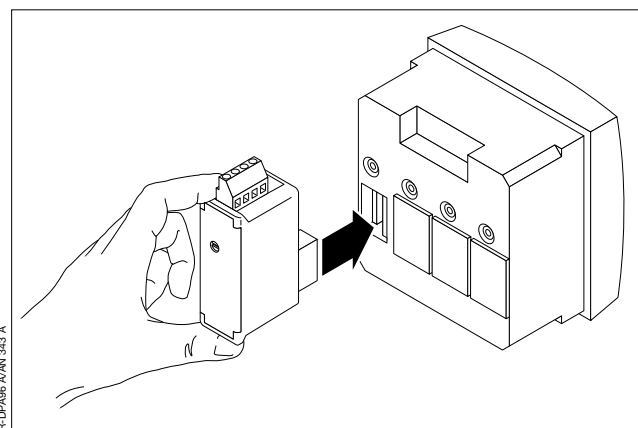
2 analogue outputs 4/20 mA or 0/20 mA configurable for current, voltage, power and power factor. 2 modules can be installed, a maximum of 4 outputs (User manual ref: 876 586)

- **Inputs/Outputs; ref: R-MODULE 5:**

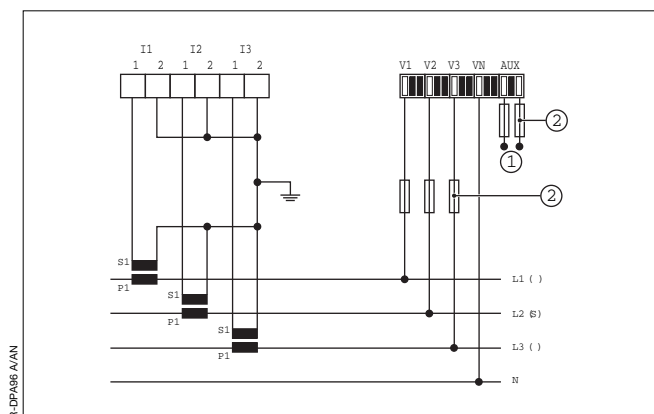
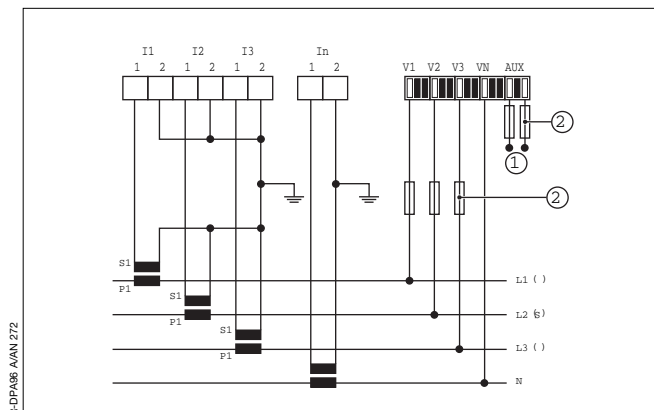
2 outputs allocated for alarms, for voltage, current, power, power factor and THD, or remote control. 2 inputs for the metering of pulses or controlling position (User manual ref: 876 587).

- **Storage capability; ref: R-MODULE 7:**

Storage capability for storing mean active and reactive power, minimum and maximum instantaneous values, the last 10 alarms, troughs/overvoltages and power cuts according to EN50160 (User manual ref: 876 588).



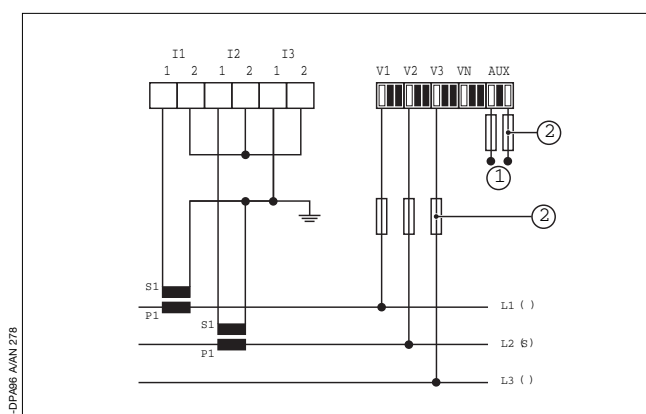
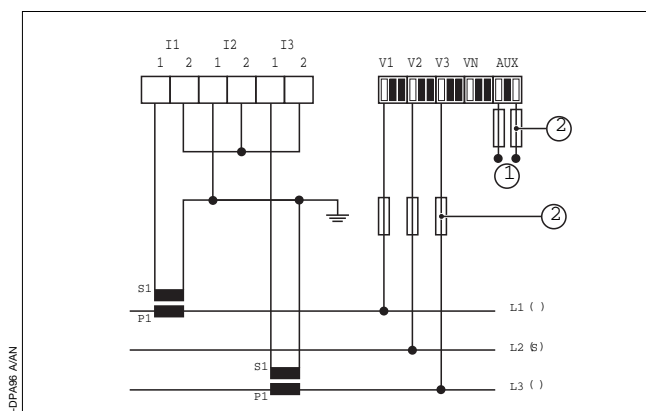
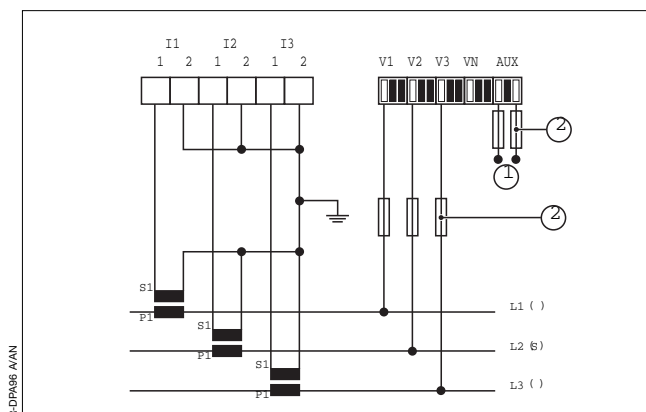
UNBALANCED THREE-PHASE NETWORK (4NBL)



- ① Aux.: 110 ... 400 V AC
120 ... 350 V DC
12 ... 48 V DC
- ② Fus.: 0.5 A gG / BS 88 2A gG / 0.5 A class CC

UNBALANCED THREE-PHASE NETWORK (3NBL)

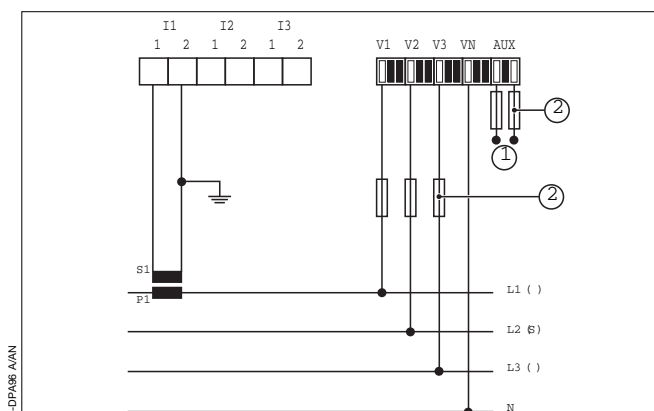
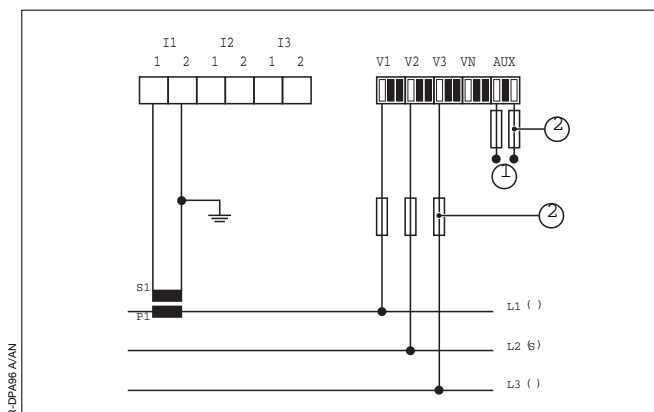
The solution with 2 CTs with the 2nd and 3rd phase current calculated via vectoral summation, results in an 0.5% reduction in phase accuracy.



- ① Aux.: 110 ... 400 V AC
120 ... 350 V DC
12 ... 48 V DC
- ② Fus.: 0.5 A gG / BS 88 2A gG / 0.5 A class CC

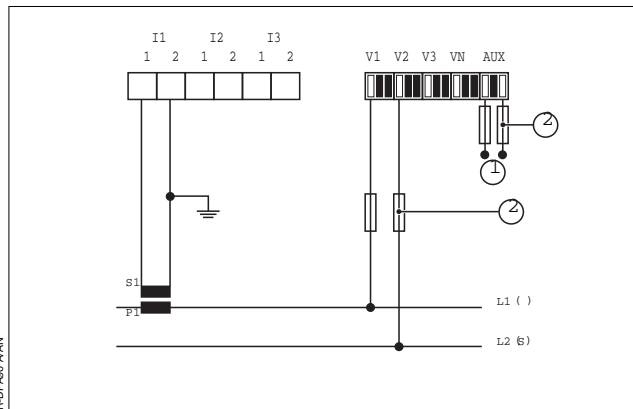
BALANCED THREE-PHASE NETWORK (3BL/4BL)

The solution using one CT, with the 3rd phase current calculated via vectorial summation, results in an 0.5% reduction in phase accuracy.



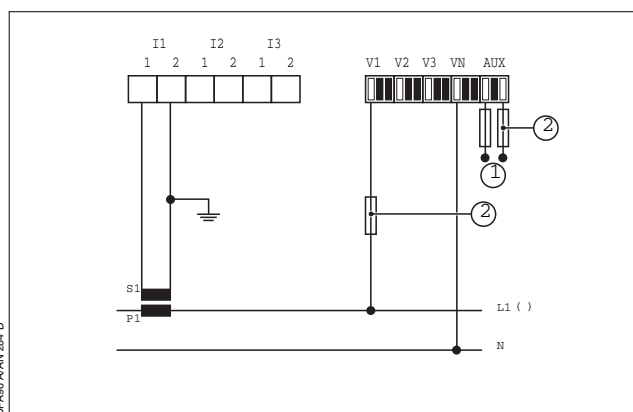
- ① Aux.: 110 ... 400 V AC
120 ... 350 V DC
12 ... 48 V DC
- ② Fus.: 0.5 A gG / BS 88 2A gG / 0.5 A class CC

TWO-PHASE NETWORK (2BL)



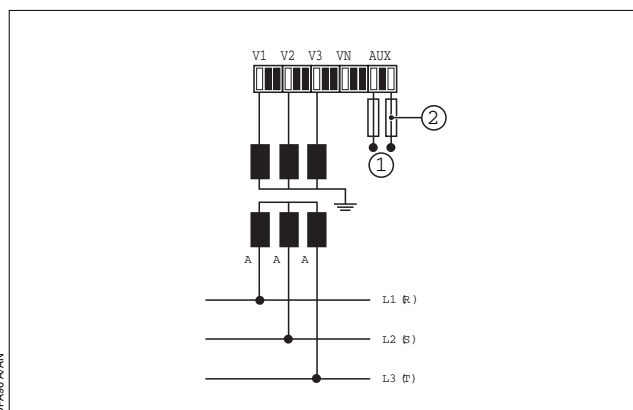
- ① Aux.: 110 ... 400 V AC
120 ... 350 V DC
12 ... 48 V DC
- ② Fus.: 0.5 A gG / BS 88 2A gG / 0.5 A class CC

SINGLE-PHASE NETWORK (1BL)



- ① Aux.: 110 ... 400 V AC
120 ... 350 V DC
12 ... 48 V DC
- ② Fus.: 0.5 A gG / BS 88 2A gG / 0.5 A class CC

VOLTAGE TRANSFORMER



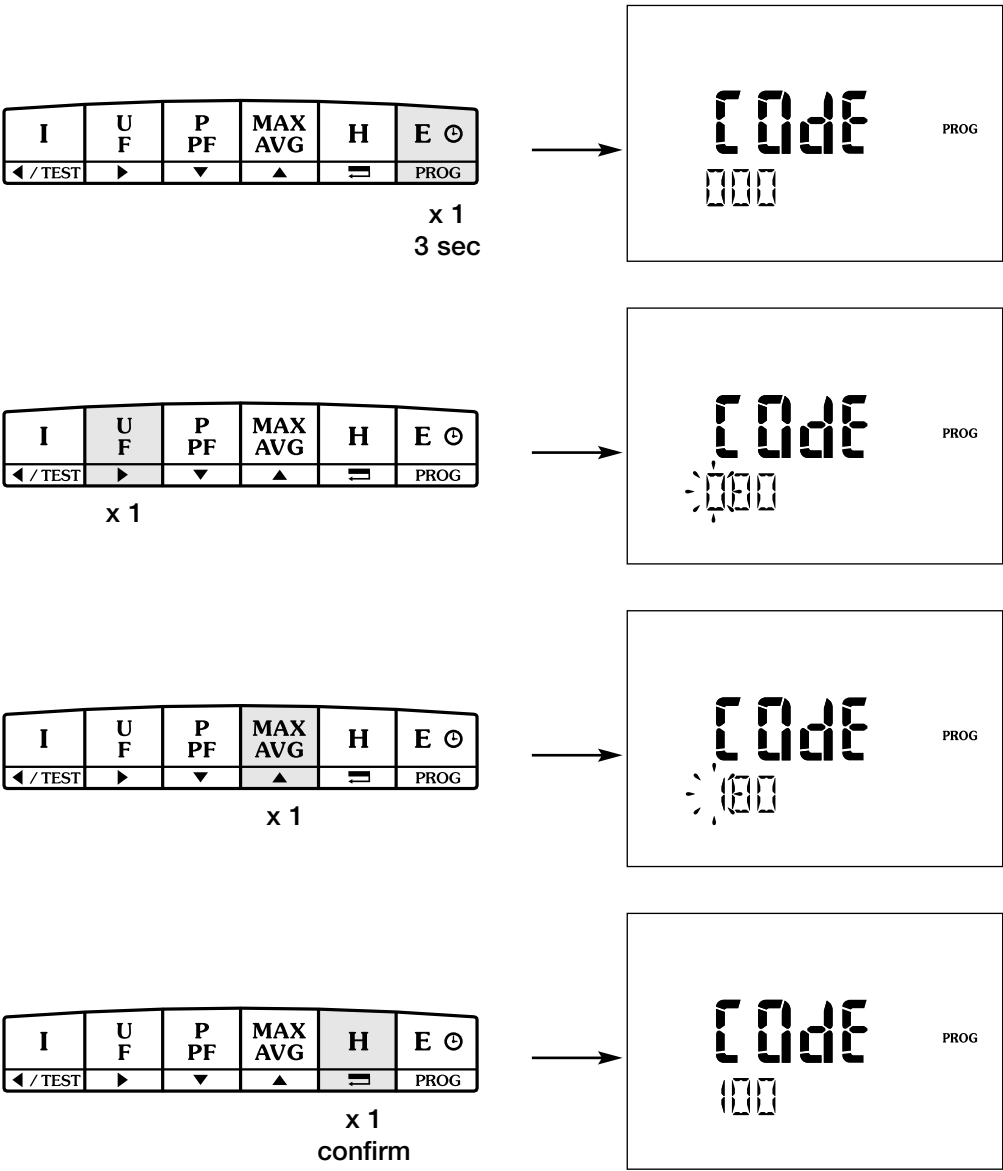
- ① Aux.: 110 ... 400 V AC
120 ... 350 V DC
12 ... 48 V DC

R-DPA96 A/AN

PROGRAMMING

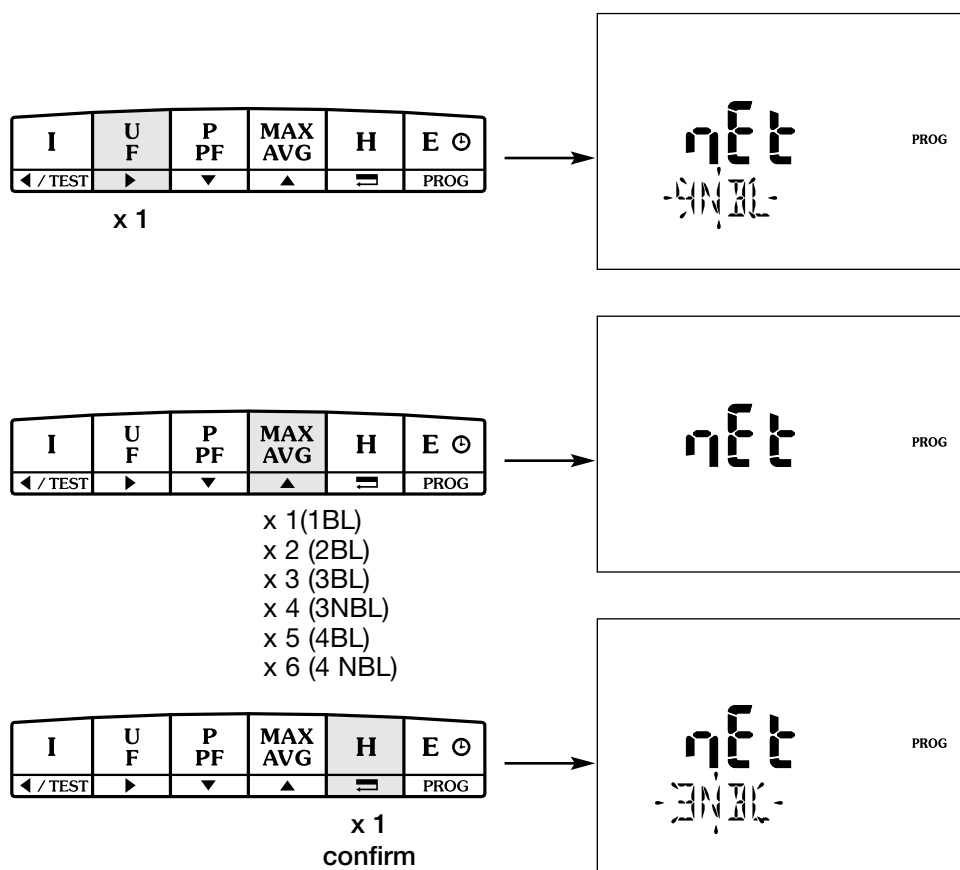
ACCES TO PROGRAMMING MODE

COde 100

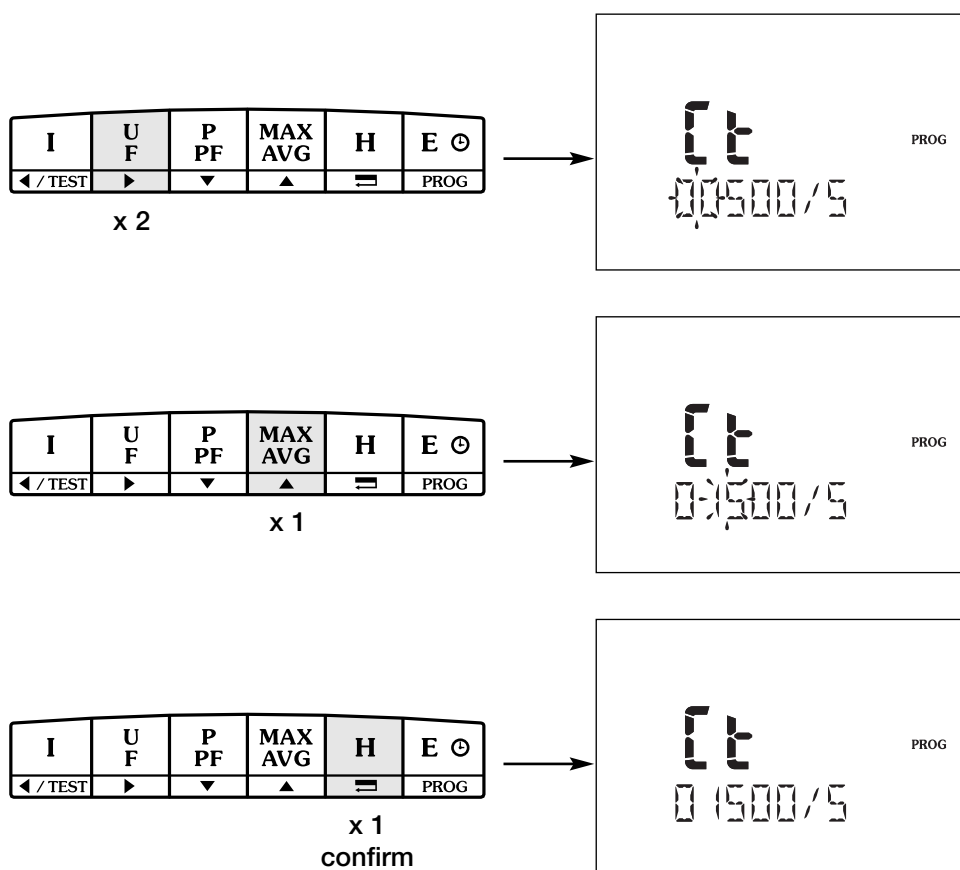


PROGRAMMING

NETWORK (Example: NET = 3NBL)



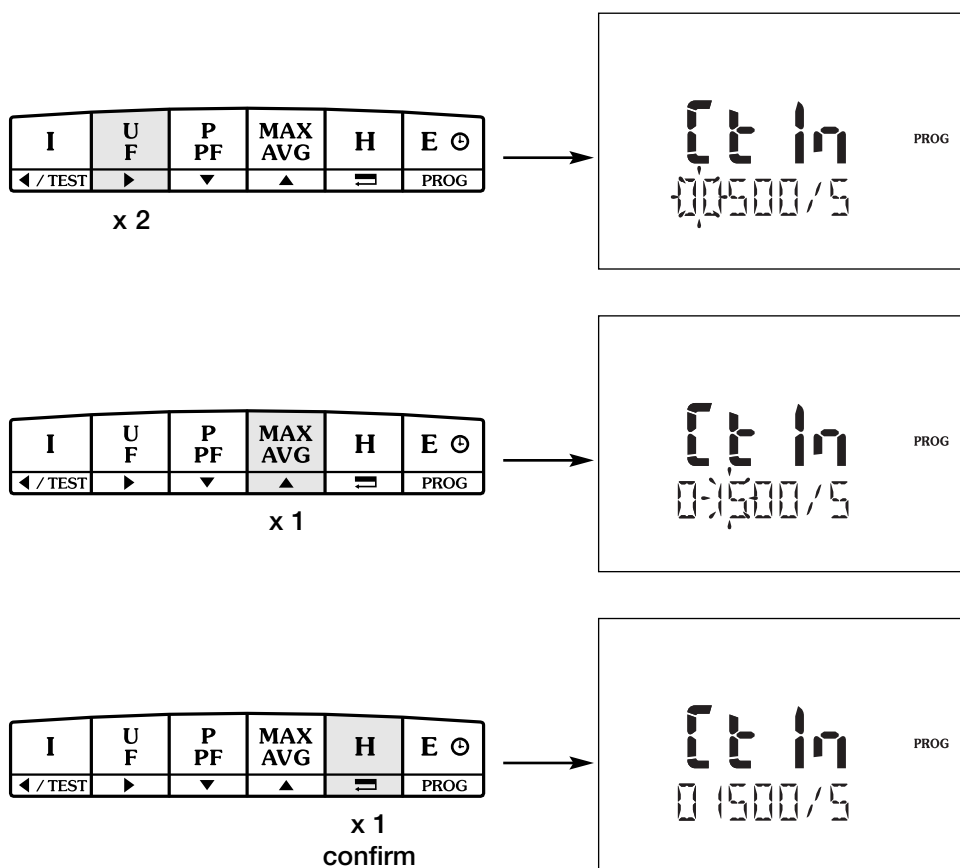
CURRENT TRANSFORMERS (Example: CT = 1500/5A)



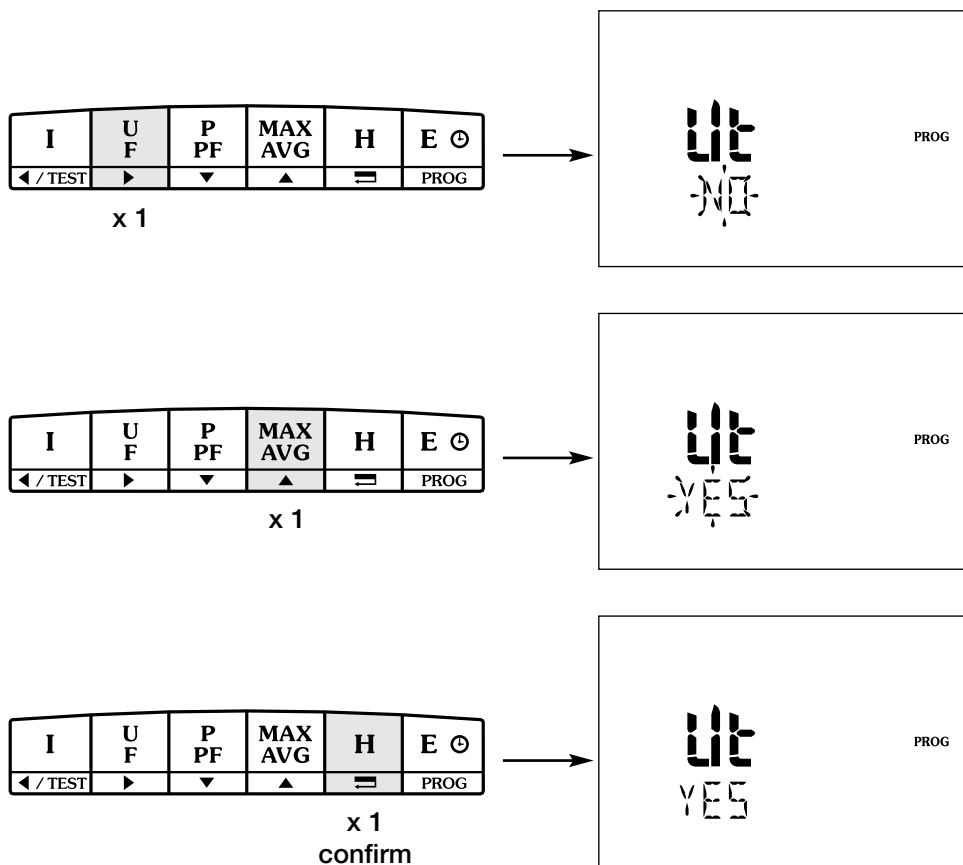
R-DPA96 A/AN

PROGRAMMING

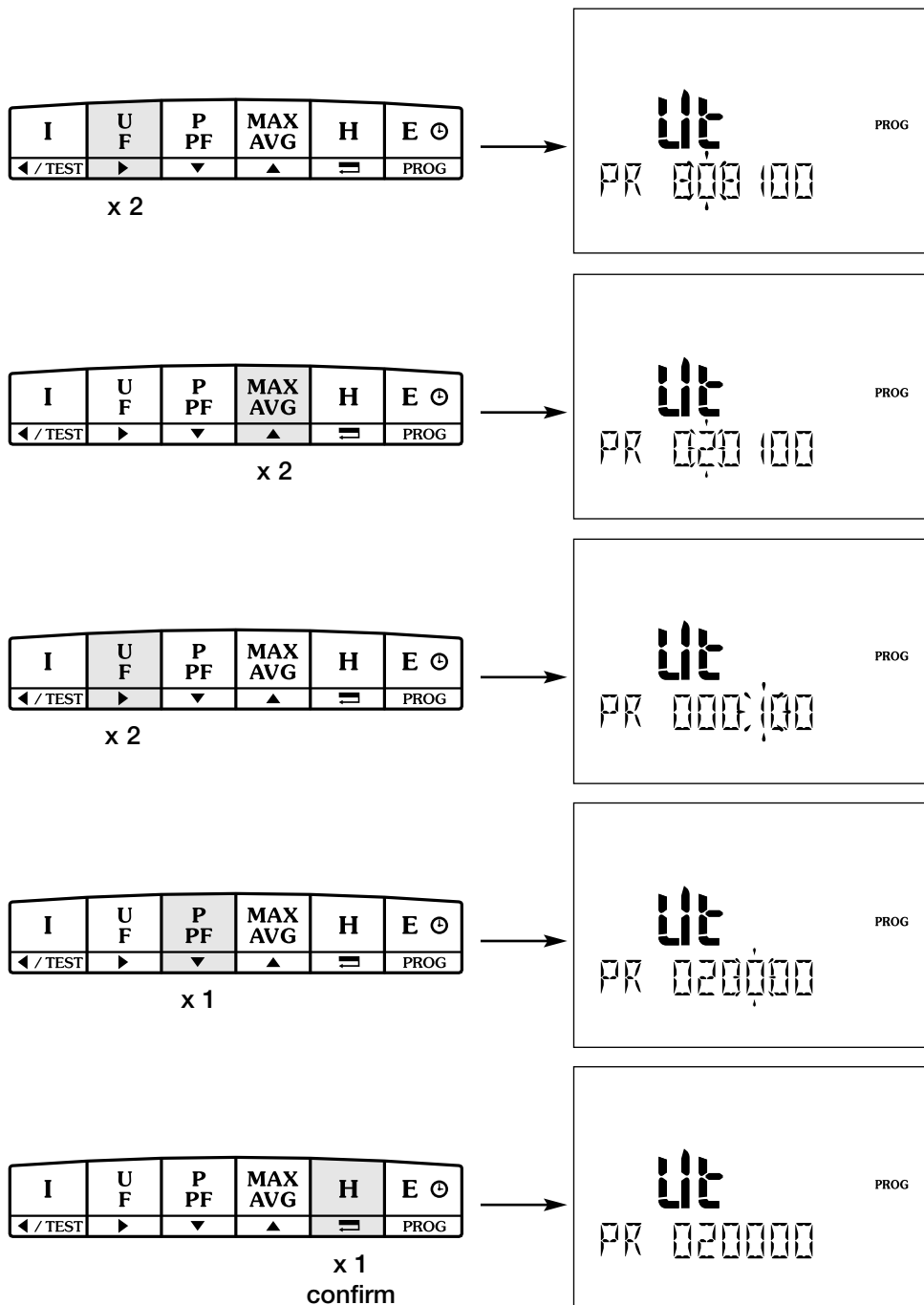
NEUTRAL CURRENT TRANSFORMER **DPA96 AN** (Example: Ct In = 1500/5A)



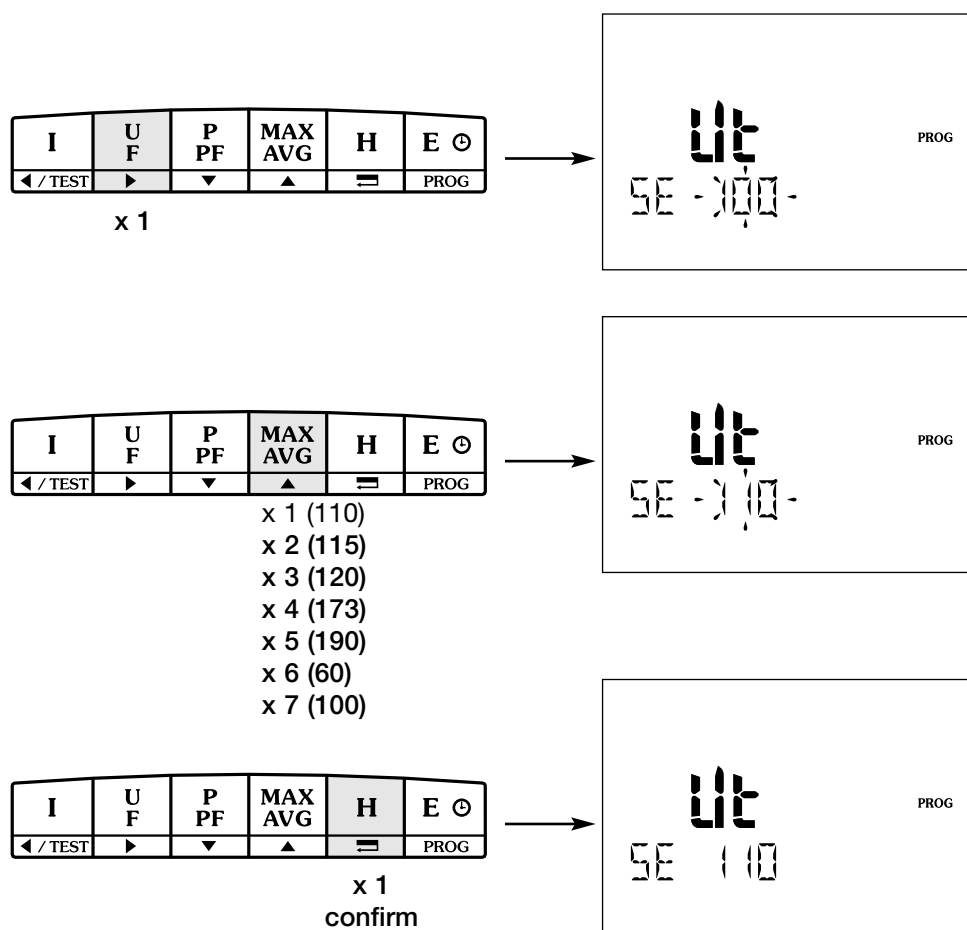
VOLTAGE TRANSFORMERS (Example: Vt = YES)



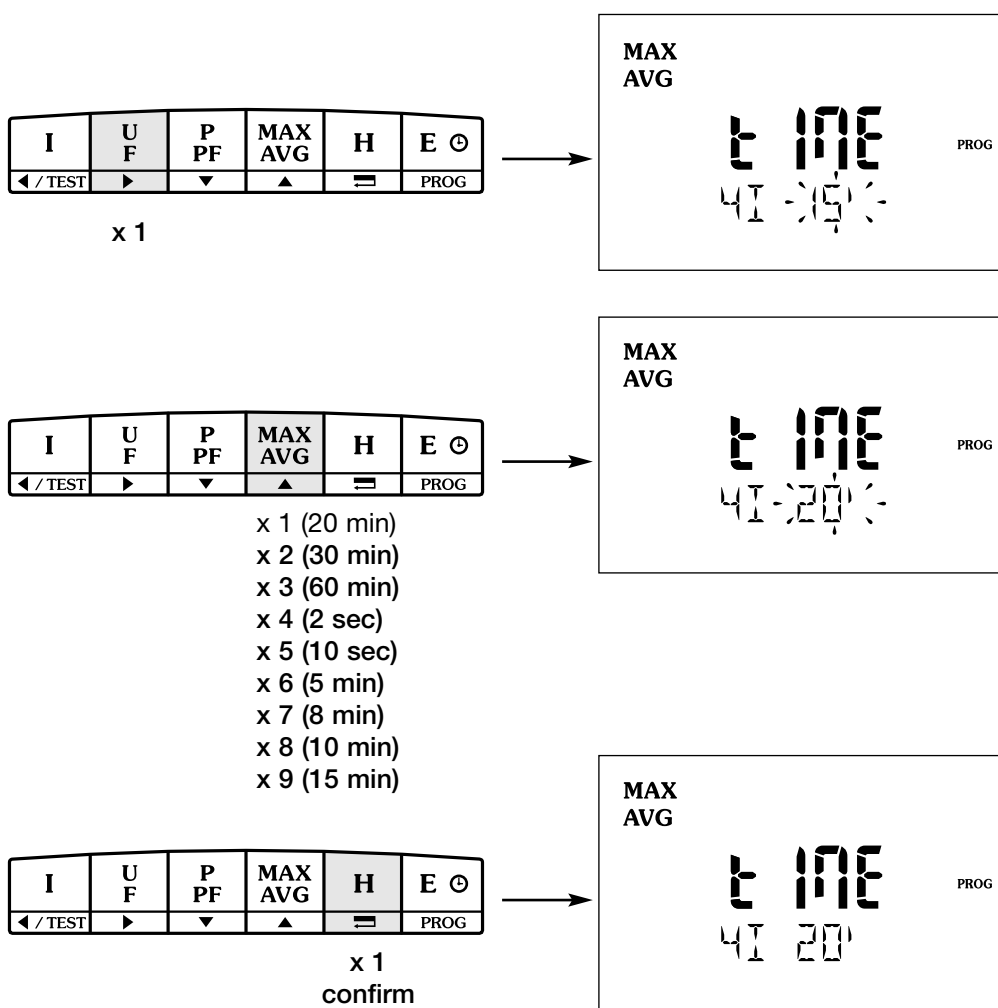
VOLTAGE TRANSFORMER PRIMARY (Example: PR = 20000 V)



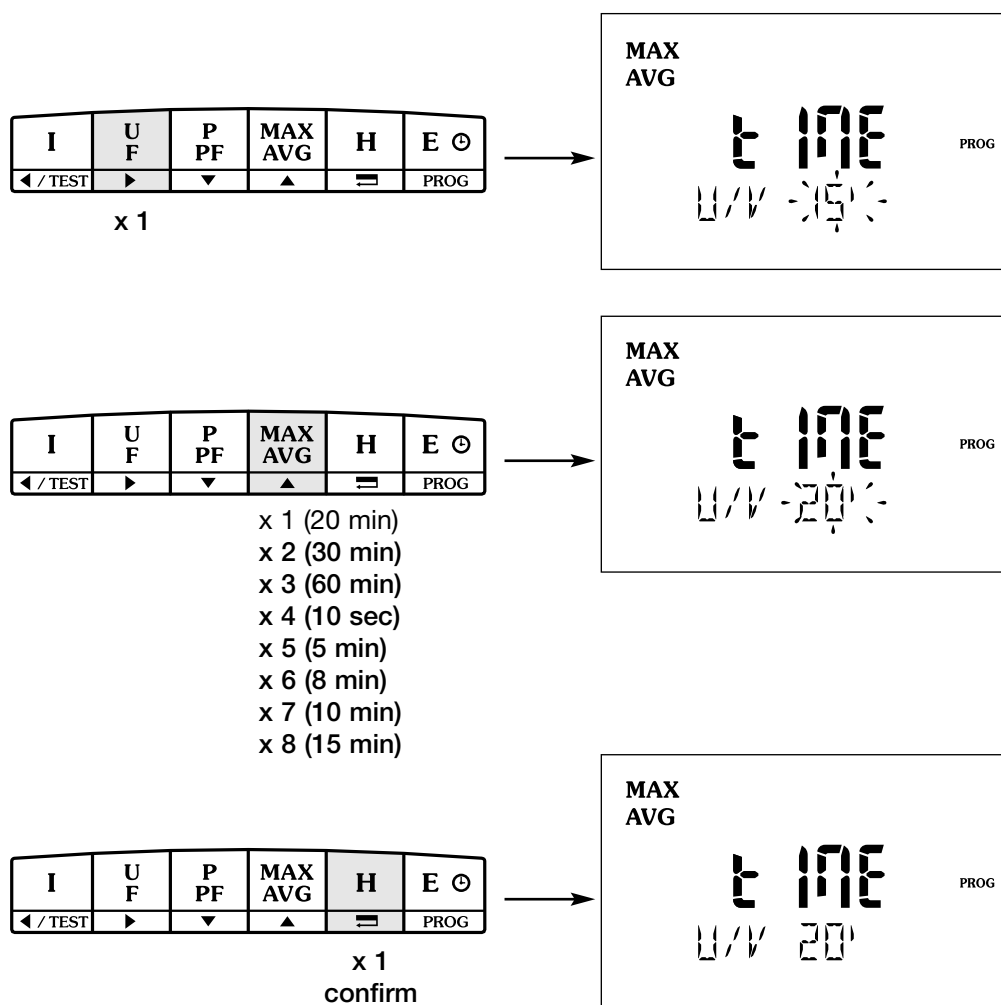
VOLTAGE TRANSFORMER SECONDARY (Example: SE = 110 V)



INTEGRATION TIME (Example: tIME 4I = 20 min)



VOLTAGE INTEGRATION (Example: tIME U/V = 20 min)

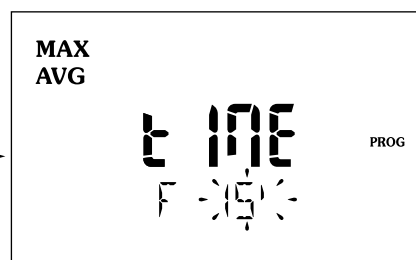


PROGRAMMING

FREQUENCY INTEGRATION (Example: tIME F = 20 min)

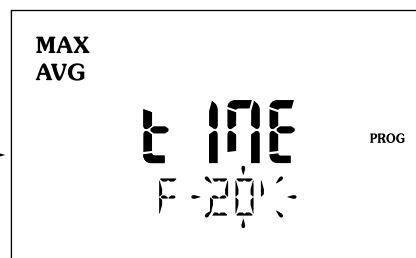
I	U F	P PF	MAX AVG	H	E ☉
◀ / TEST	▶	▼	▲	≡	PROG

x 1

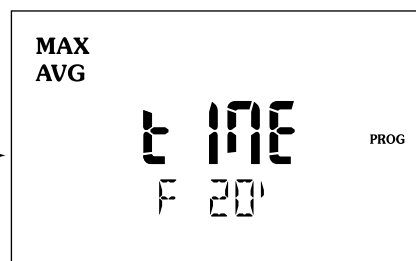


I	U F	P PF	MAX AVG	H	E ☉
◀ / TEST	▶	▼	▲	≡	PROG

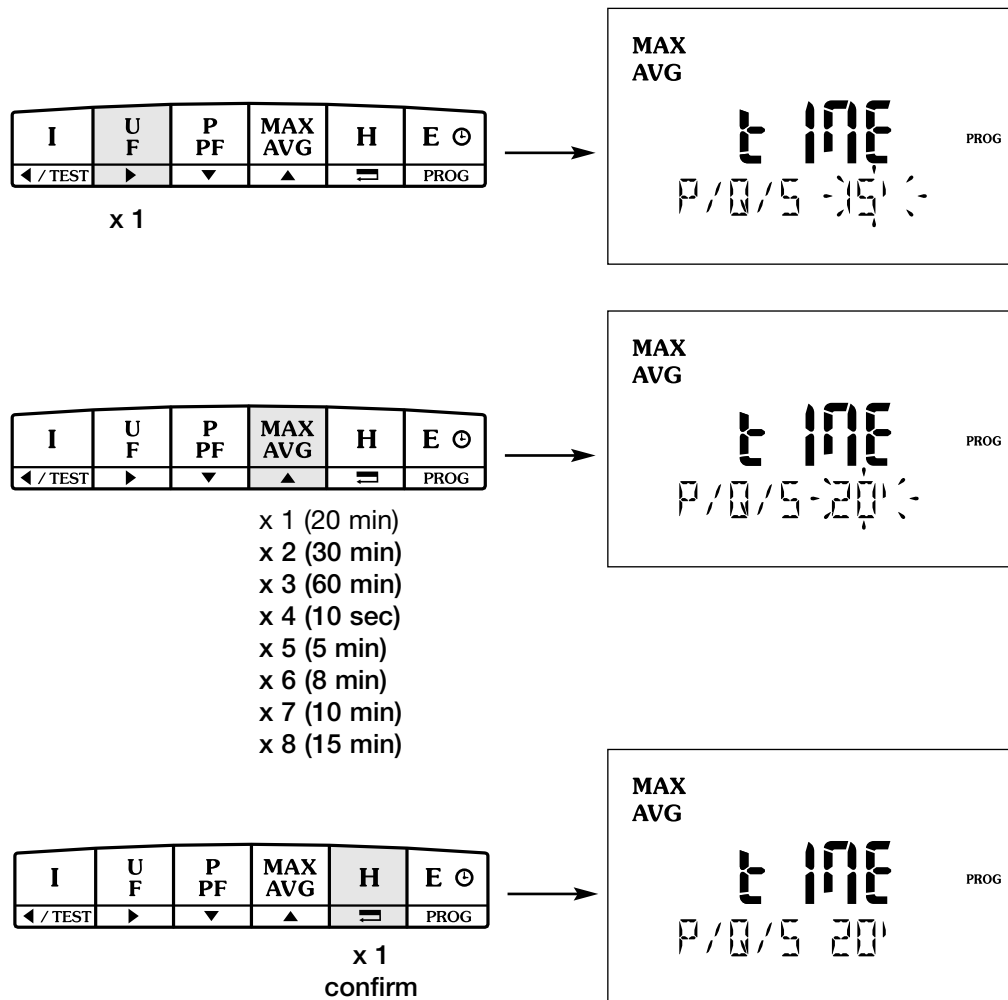
- x 1 (20 min)
- x 2 (30 min)
- x 3 (60 min)
- x 4 (10 sec)
- x 5 (5 min)
- x 6 (8 min)
- x 7 (10 min)
- x 8 (15 min)



I	U F	P PF	MAX AVG	H	E ☉
◀ / TEST	▶	▼	▲	≡	PROG

x 1
confirm

INTEGRATION ACTIVE TIME POWERS (Example: tIME P/Q/S = 20 min)



RESET TO ZERO (Example: rSET = Ea)

I	U F	P PF	MAX AVG	H	E ⊖
◀ / TEST	▶	▼	▲	≡	PROG

x 1

I	U F	P PF	MAX AVG	H	E ⊖
◀ / TEST	▶	▼	▲	≡	PROG

x 1 (MAX P+)
 x 2 (MAX P-)
 x 3 (MAX Q+)
 x 4 (MAX Q-)
 x 5 (MAX S)
 x 6 (HOUR)
 x 7 (EA+)
 x 8 (ER+)
 x 9 (ES)
 x 10 (EA-)
 x 11 (ER-)
 x 12 (MAX 4I)
 x 13 (MAX U)
 x 14 (MAX V)
 x 15 (MAX F)

I	U F	P PF	MAX AVG	H	E ⊖
◀ / TEST	▶	▼	▲	≡	PROG

x 1

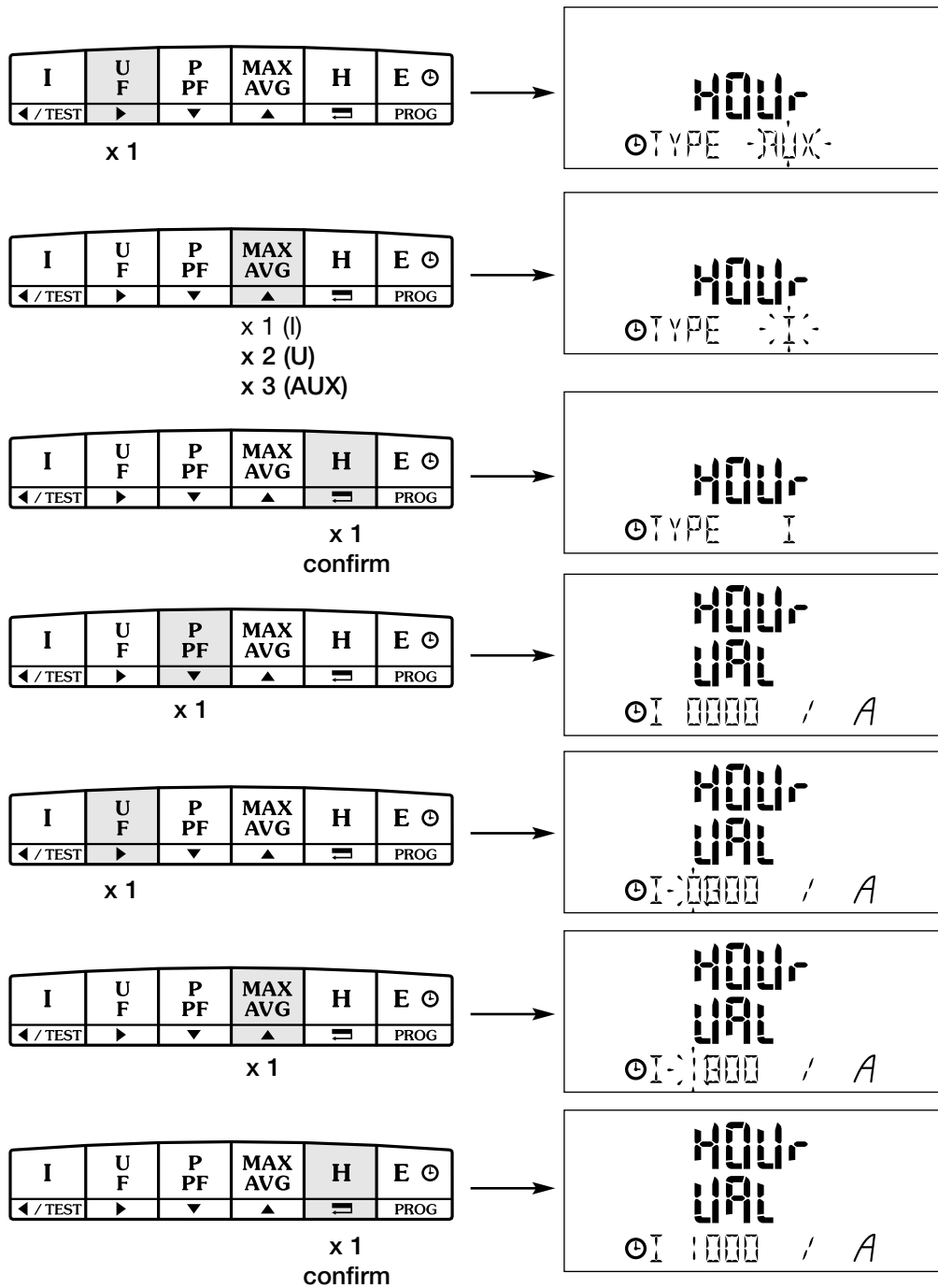
I	U F	P PF	MAX AVG	H	E ⊖
◀ / TEST	▶	▼	▲	≡	PROG

x 1

I	U F	P PF	MAX AVG	H	E ⊖
◀ / TEST	▶	▼	▲	≡	PROG

x 1
confirm

HOUR RUN METER (Example: hour meter (for current) with start-up at 1000A)



PROGRAMMING

BACKLIT LCD DISPLAY (Example: bACLIT = AUX)

I	U F	P PF	MAX AVG	H	E ☉
◀ / TEST	▶	▼	▲	≡	PROG

x 1

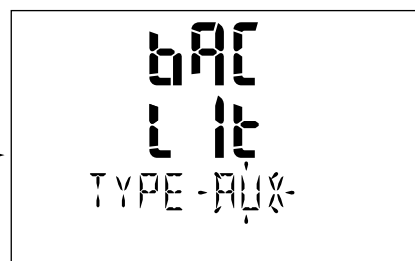


I	U F	P PF	MAX AVG	H	E ☉
◀ / TEST	▶	▼	▲	≡	PROG

x 1 (AUX)

x 2 (I)

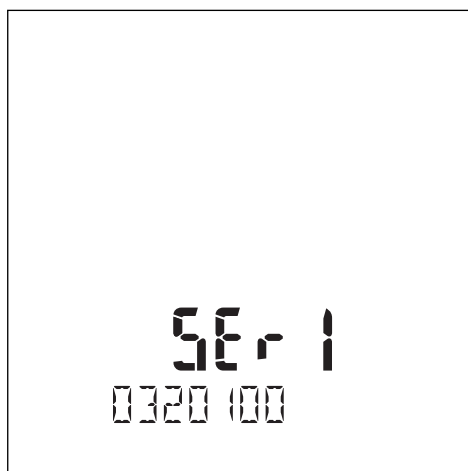
x 3 (U)



I	U F	P PF	MAX AVG	H	E ☉
◀ / TEST	▶	▼	▲	≡	PROG

x 1
confirm

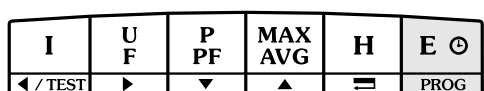
SERIAL NUMBER (Example: SEr = 0320100)



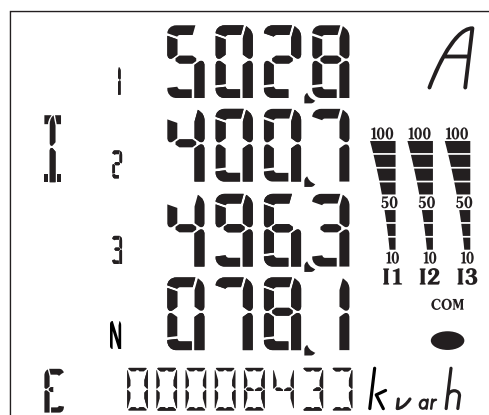
SOFTWARE VERSION

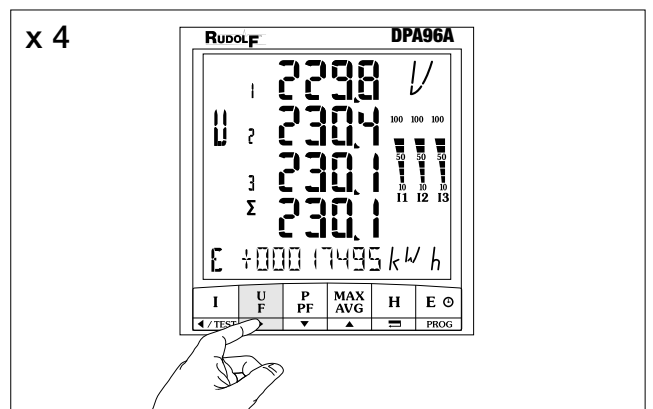
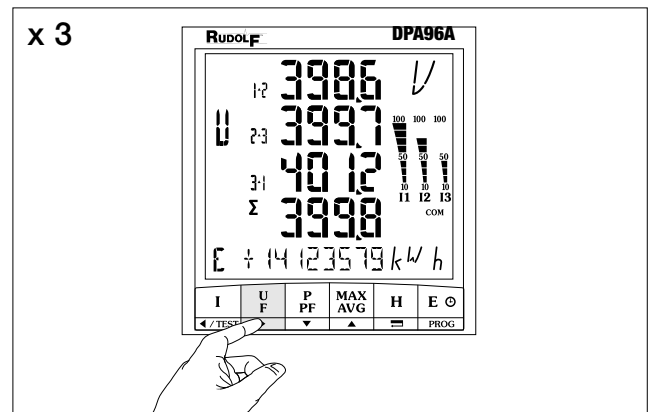
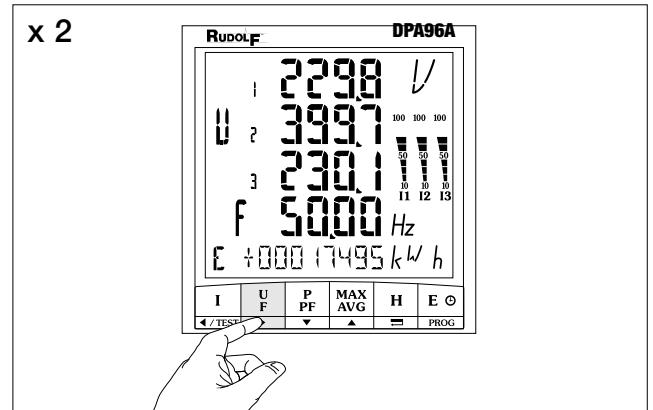
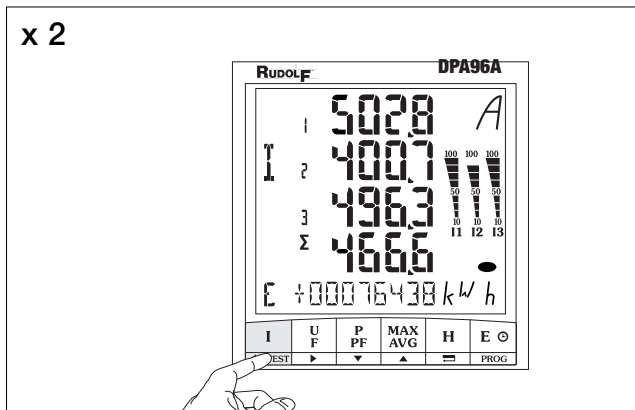
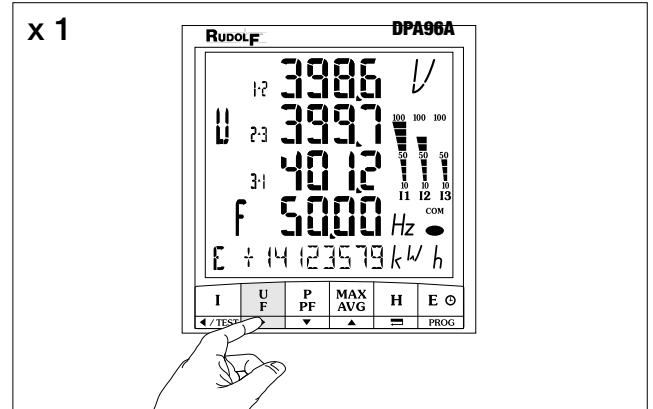
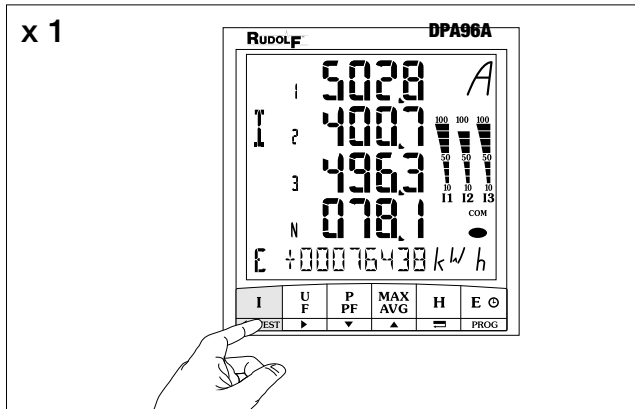


TO QUIT PROGRAMMING

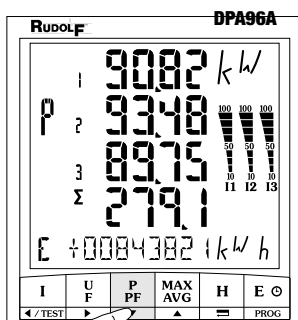


x 1
3 sec.

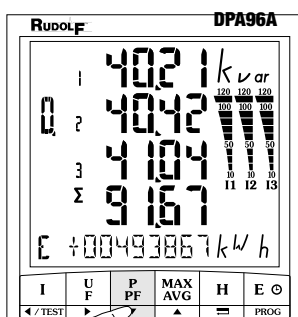




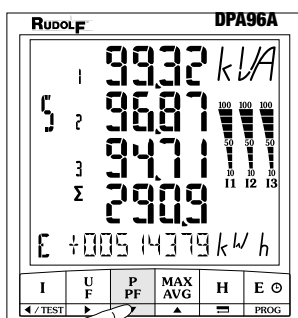
x 1



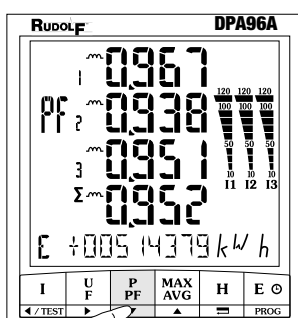
x 2



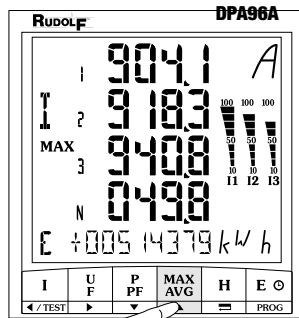
x 3



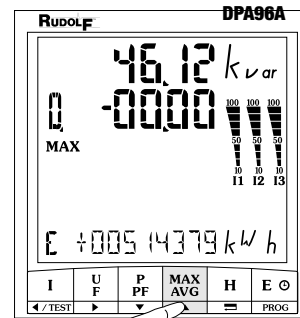
x 4



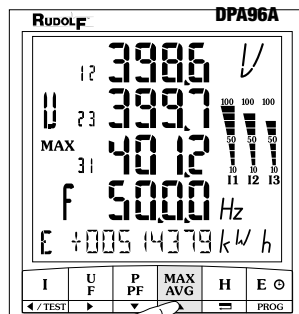
x 1



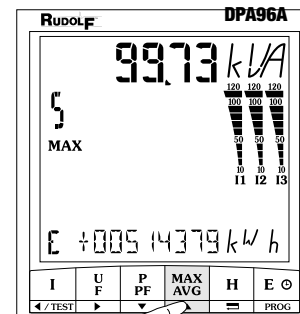
x 5



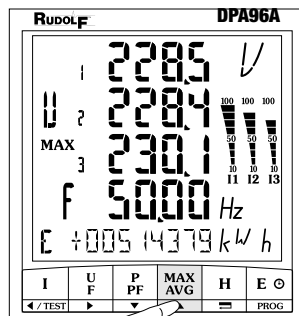
x 2



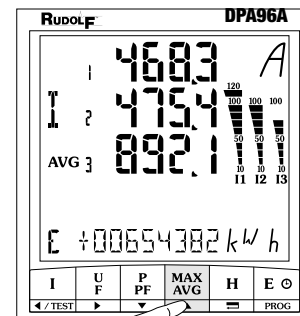
x 6



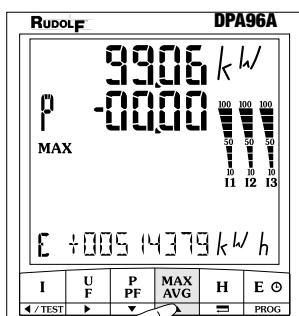
x 3



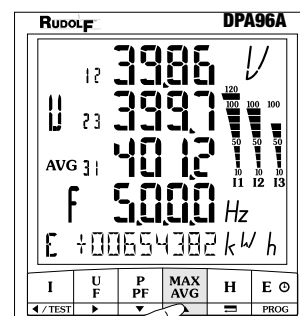
x 7



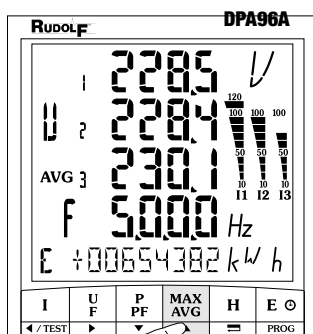
x 4



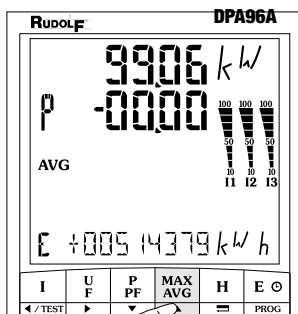
x 8



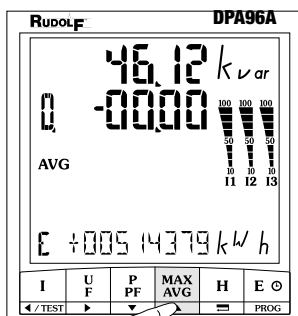
x 9



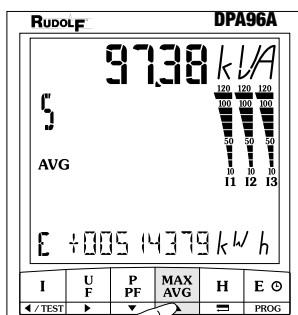
x 10



x 11

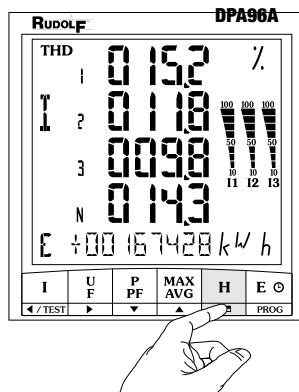


x 12

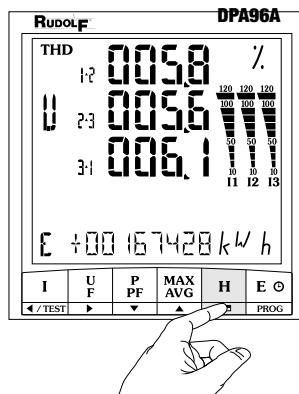


OPERATION

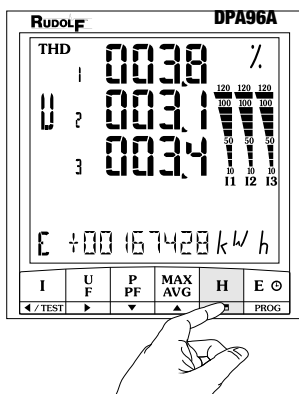
x 1



x 2



x 3



CONNECTION TEST FUNCTION

During the test, the R-DPA96 A/AN must have current and voltage for each of the phases.

In addition to this, the function recognises the PF of the installation as being between $0.6 > PF < 1$. If the PF of the installation is not within this range, this function cannot be used.

In 4 BL/3 BL/2BL/1 BL, the connection of the CTs is controlled only.

In 4NBL and 3NBL the connection as a whole is controlled.

Do check that these are the right conditions:

Err 0 = no error

Err 1 = CT phase 1 inverted

Err 2 = CT phase 2 inverted

Err 3 = CT phase 3 inverted

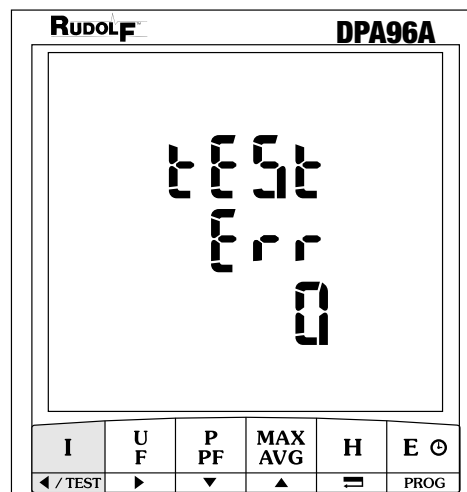
Err 4 = V1 and V2 voltages inverted

Err 5 = V2 and V3 voltages inverted

Err 6 = V3 and V1 voltages inverted

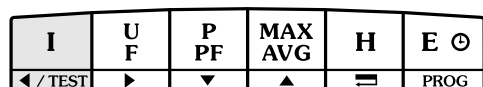
For the Err 1, Err 2 and Err 3, the modification can be performed automatically by the R-DPA96 A/AN or manually by correcting the current connections.

For the Err 4, Err 5 and Err 6 the modification must be performed manually by correcting the voltage connections.

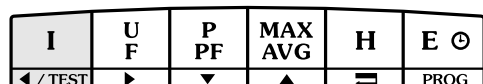
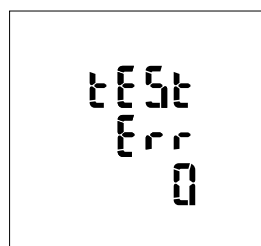


x 1
3 sec

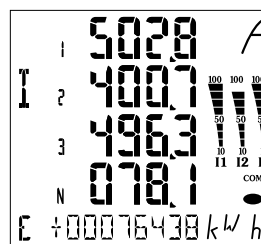
Example: tEsT Err 0



x 1
3 sec.

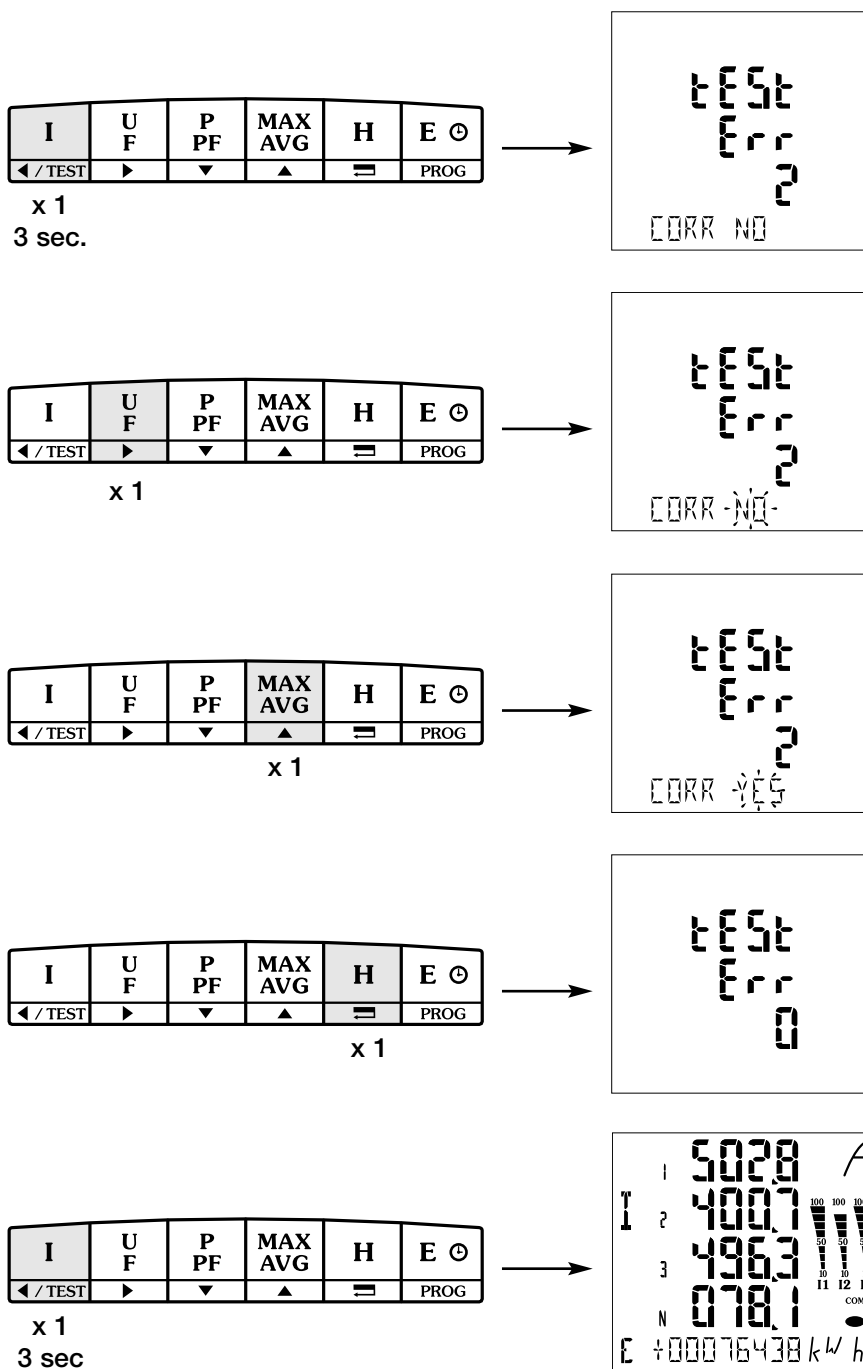


x 1
3 sec.



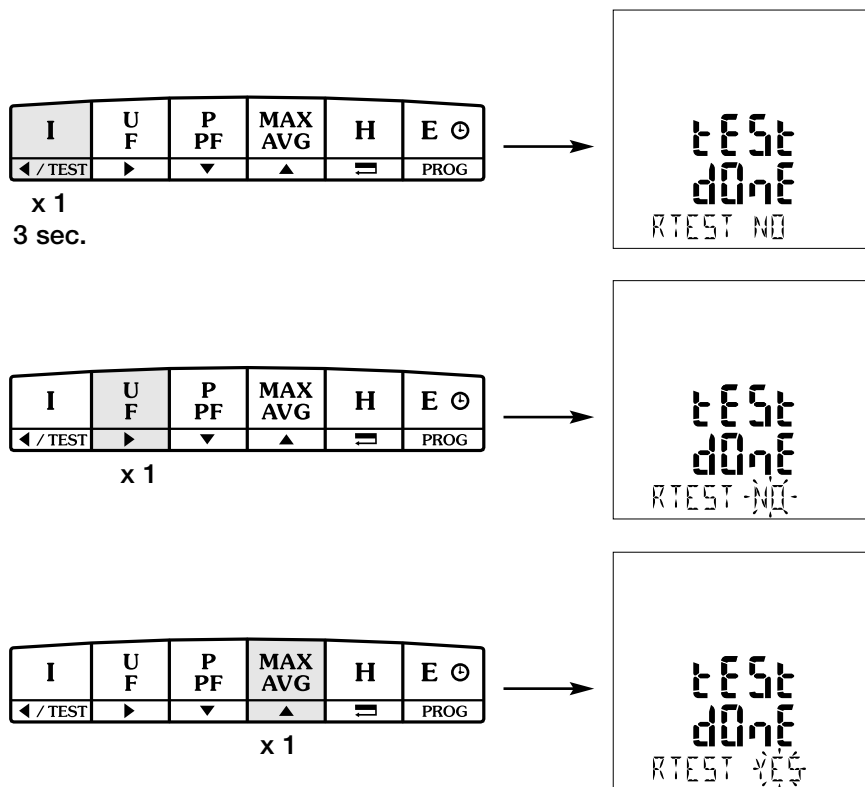
CONNECTION TEST FUNCTION

Example: tEsT Err 2



> second test operation

This menu is displayed if the product has already been tested. You can run a full test again as explained below..



-
- **Device Switched off**
Check auxiliary supply
 - **Backlight switched off**
Check backlight configuration in set up menu (p. 30)
 - **Voltage = 0**
Verify the connections
 - **Current = 0 or incorrect**
Verify the connections
Verify the configuration of CT's in set up
 - **Powers, power-factor and energies false**
Use the test connection function (p. 38)
 - **Phases missing on Display**
Check the Network configuration
(in set up menu) (p. 21)

TECHNICAL CHARACTERISTICS

CASE

Dimensions:	96 x 96 x 60 mm or 96 x 96 x 80 mm with all optional modules (DIN 43700)
Connection:	via 2.5 mm ² disconnectable terminals (voltage and others) and 6 mm ² fixed terminals (current)
IP index:	IP52 (front panel) and IP30 (case)
Weight:	400 gr.

DISPLAY

Type :	Backlit LCD display
--------	---------------------

MEASUREMENTS

Three-phase (3 or 4 wires), two-phase (2 wire) and single-phase networks

VOLTAGE (TRMS)

Direct measurement:	from 18 to 700 V AC (phase/phase) from 10 to 404 V AC (phase/neutral)
Measurement via PT:	- Primary: up to 500 kV - Secondary: 60, 100, 110, 115, 120, 173 and 190 V AC
Display and resolution	from 0 to 500.0 kV
Permanent overload:	760 V AC
Update period:	1 second

CURRENT (TRMS)

Via CT with:	- Primary: up to 10000 A - Secondary: 1 or 5 A
Minimum measuring current	10 mA
Input consumption:	< 0.3 VA
Display:	from 0 to 11 kA (1.1 times the primary value)
permanent overload:	10 A
intermittent overload:	10 In / 1 second
Update period:	1 second
Maximum ratio KI x KU:	10 000 000

POWER

Total:	0 to 8000 MW/Mvar/MVA
Update period:	1 second

FREQUENCY

	from 45,0 to 65,0 Hz
Update period:	1 second

ENERGY / MEASUREMENT ACCURACY

Current:	0.2 % from 10 to 110 % / In
Voltage:	0.2 % from 140 to 700 V AC
Power:	0.5 % of full scale (-90° à + 90°)
Power factor:	0.5 % for 0.5 < FP < 1
Frequency:	0.1 % from 45 to 65 Hz
Active energy metering:	± 0.5 % from 0.02 to 1,2 In with PF = 0.5 L or 0.8 C (class 0.5S IEC 62053-22)
Reactive energy metering:	± 2% from 0.1 to 1,2 In with sinφ = 0.5 L or C (class 2 IEC 62053-23)

AUXILIARY SUPPLY

110 to 440 V AC 50/60 Hz	± 10 %
120 to 350 V DC	± 20 %
12 to 48 V DC	-6 % / + 20 %
Consumption:	< 10 VA

OPERATING CONDITIONS

Operating temperature:	-10° to + 55°C (14° to 131°F)
Storage temperature:	-20° to + 85°C (-4° to 158°F)
Relative humidity:	95 %

CE MARKING

The R-DPA96 A/AN A40/A41 complies with :

- The requirements of the European directive on electromagnetic compatibility (EMC) no. 89/336/CEE dated 3 May 1989, modified by directive no. 92/31/CEE dated 28 April 1992 and by directive no. 93/68/CEE dated 22 July 1993.
- Low voltage directive no. 73/23/CEE dated 19 February 1973, modified by directive no. 93/68/CEE dated 22 July 1993.

ELECTROMAGNETIC COMPATIBILITY

Immunity to electrostatic discharges:	IEC 61000-4-2 - Level III
Immunity to radiated radio-frequency fields:	IEC 61000-4-3 - Level III
Immunity to electrical fast transients/bursts:	IEC 61000-4-4 - Level IV
Immunity to impulse waves:	IEC 61000-4-5 - Level IV
Immunity to conducted disturbances:	IEC 61000-4-6 - Level III
Immunity to power frequency magnetic fields:	IEC 61000-4-8 - Level IV
Conducted and radiated emissions:	IEC 61000-6-4 - Class B
Immunity to voltage dips and short interruptions:	IEC 61000-4-11

CLIMATE

Operating-temperature range:	IEC 60068-2-1/IEC 60068-2-2 -10 °C to +55 °C
Storage temperature range:	IEC 60068-2-1/IEC 60068-2-2 -20 °C to +85 °C
Humidity:	IEC 60068-2-30 - 95 %
Saling fog:	IEC 60068-2-52 - 2,5 % NaCl

MECHANICAL CHARACTERISTICS

Vibration from 10 to 50 Hz:	IEC 60068-2-6 - 2 g
-----------------------------	---------------------

INSULATION

Installation category:	III (480VAC ph/ph)
Degree of pollution:	2
Rated impulse withstand voltage:	IEC 60947-1 - V imp: 4 kV
Front face:	Classe II
Electric security:	IEC 61010-1

CERTIFICATION

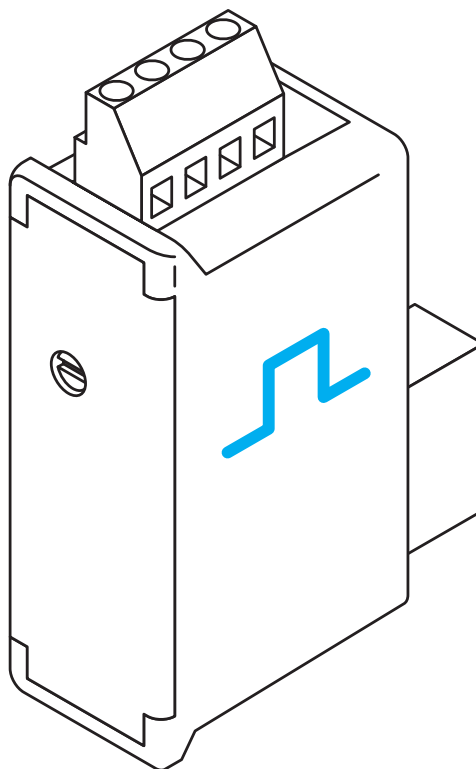
UL 61010-1	N° file : E257746
------------	-------------------

GLOSSARY OF ABBREVIATIONS

nEt	Network type
4NBL	Unbalanced three-phase network, 4 wires with 3 or 4 TC
4BL	Balanced three-phase network, 4 wires with 1 TC
3NBL	Unbalanced three-phase network, 3 wires with 2 or 3 TC
3BL	Balanced three-phase network, 3 wires with 1 TC
2BL	Two-phase network, 2 fils avec 1 TC
1BL	Single-phase network, 2 fils avec 1 TC
Ct	Current transformers
Ct In	Neutral current transformer
Ut	Voltage transformer
Ut PR	Voltage transformer primary
Ut SE	Voltage transformer secondary
MAX	Maximum mean values
AVG	Average value
time I	Integration times for mean and maximum current values
time U	Integration times for mean and maximum voltage values
time F	Integration times for mean and maximum frequency values
time P/Q/S	Integration times for mean and maximum power values
rSET	Reset
MAX P+	Active power maximum positive mean value
MAX P-	Active power maximum negative mean value
MAX Q+	Reactive power maximum positive mean value
MAX Q-	Reactive power maximum negative mean value_A faire valider
MAX S	Effective power maximum mean value
HOUr	Hour run meter
EA+	Positive active power (+kWh)
EA-	Negative active power (-kWh)
ER+	Positive reactive power (+kvarh)
ER-	Negative reactive power (-kvarh)
ES	Apparent power (-kVAh)
HOUr	Hour meter start-up (U or I or Aux. condition)
AUX	Auxiliary supply
bACLIt	LCD start-up (U or I or Aux. Condition)
SErI	Serial number
SOft	Software version
PF	Power factor
THD I	Current harmonic distortion rate
THD In	Neutral current distortion rate
THD U	Phase-to-phase voltage distortion rate
THD V	Phase-to-neutral voltage distortion rate
⌚	Hour run meter

R-DPA96 A/AN - R-Module 1

2 Outputs kWh - kvarh - KVAh



PRELIMINARY OPERATIONS

When the package containing the optional module is received, the following points must be checked:

- the packing is in good condition,
- the product has not been damaged during transit,
- the product reference number conforms to your order,
- the package contains the product,
- the operating instructions.

PRESENTATION

This optional module must be connected to the R-DPA96 A/AN (ref. 4825 0A40, 4825 0A41, 4825 1A40, 4825 1A41). This module allows the combining with the metering of active (0 to 99 999 999 kWh), reactive (0 to 99 999 999 kvarh) and apparent energy (0 to 99 999 999 kVAh) of two pulse outputs that can be configured according to value (0.1, 1, 10, 100 kWh, kvarh or kVAh and 1 or 10 MWh, Mvarh and MVAh) and duration (100 ms to 900 ms).

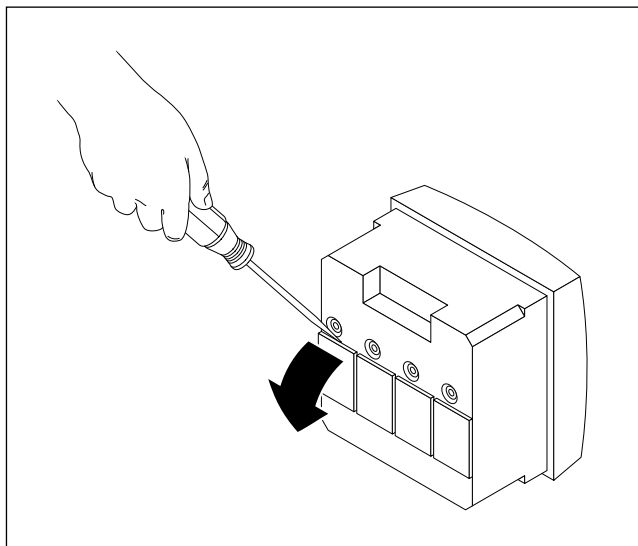
INSTALLATION

CONNECTION

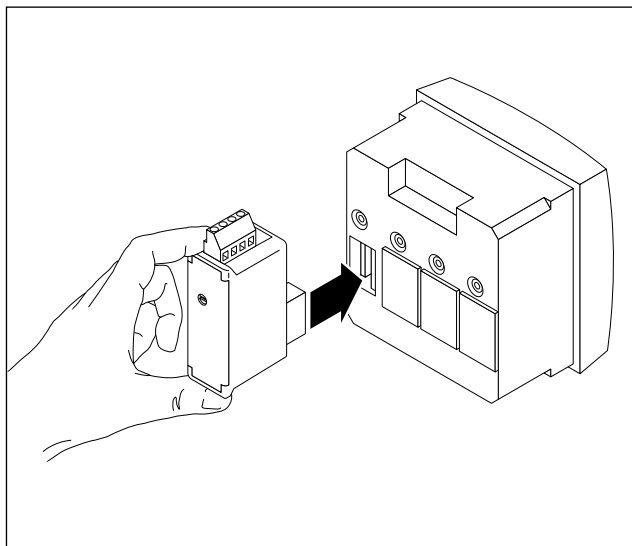


This R-DPA96 A/AN must be switched off.

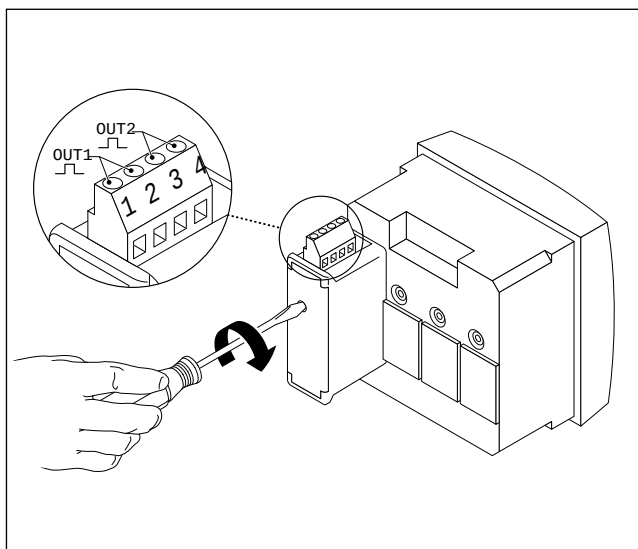
①



② Fix the module



③



④ Follow indications when connecting the terminal. Switch on voltage supply.

PROGRAMMING

I	U F	P PF	MAX AVG	H	E ☉
◀ / TEST	▶	▼	▲	≡	PROG



I	U F	P PF	MAX AVG	H	E ☉
◀ / TEST	▶	▼	▲	≡	PROG



I	U F	P PF	MAX AVG	H	E ☉
◀ / TEST	▶	▼	▲	≡	PROG



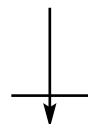
I	U F	P PF	MAX AVG	H	E ☉
◀ / TEST	▶	▼	▲	≡	PROG



I	U F	P PF	MAX AVG	H	E ☉
◀ / TEST	▶	▼	▲	≡	PROG



Previous menu



Out 1
TYPE EA

p 39



Out 1
VAL 10

p 40



Out 1
IUR 100

p 41



Out 2

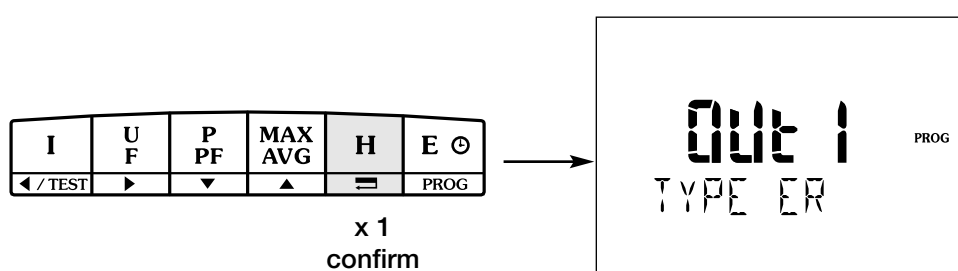
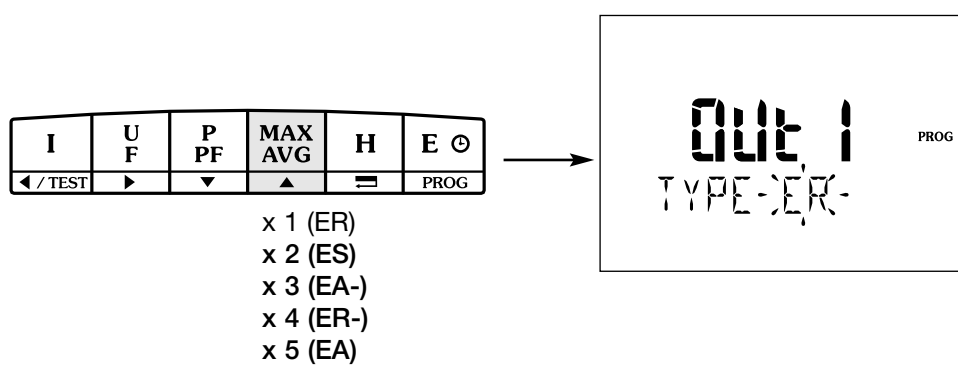
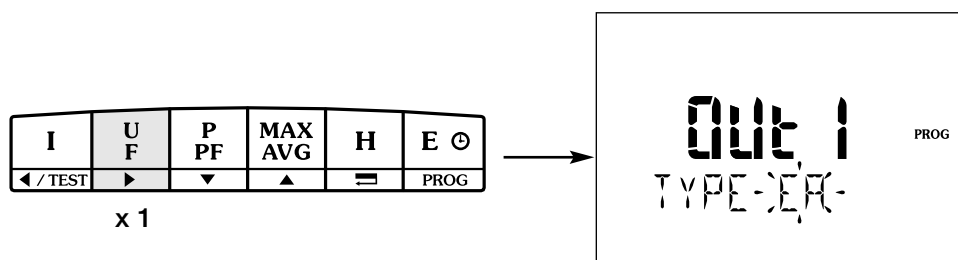
p 42



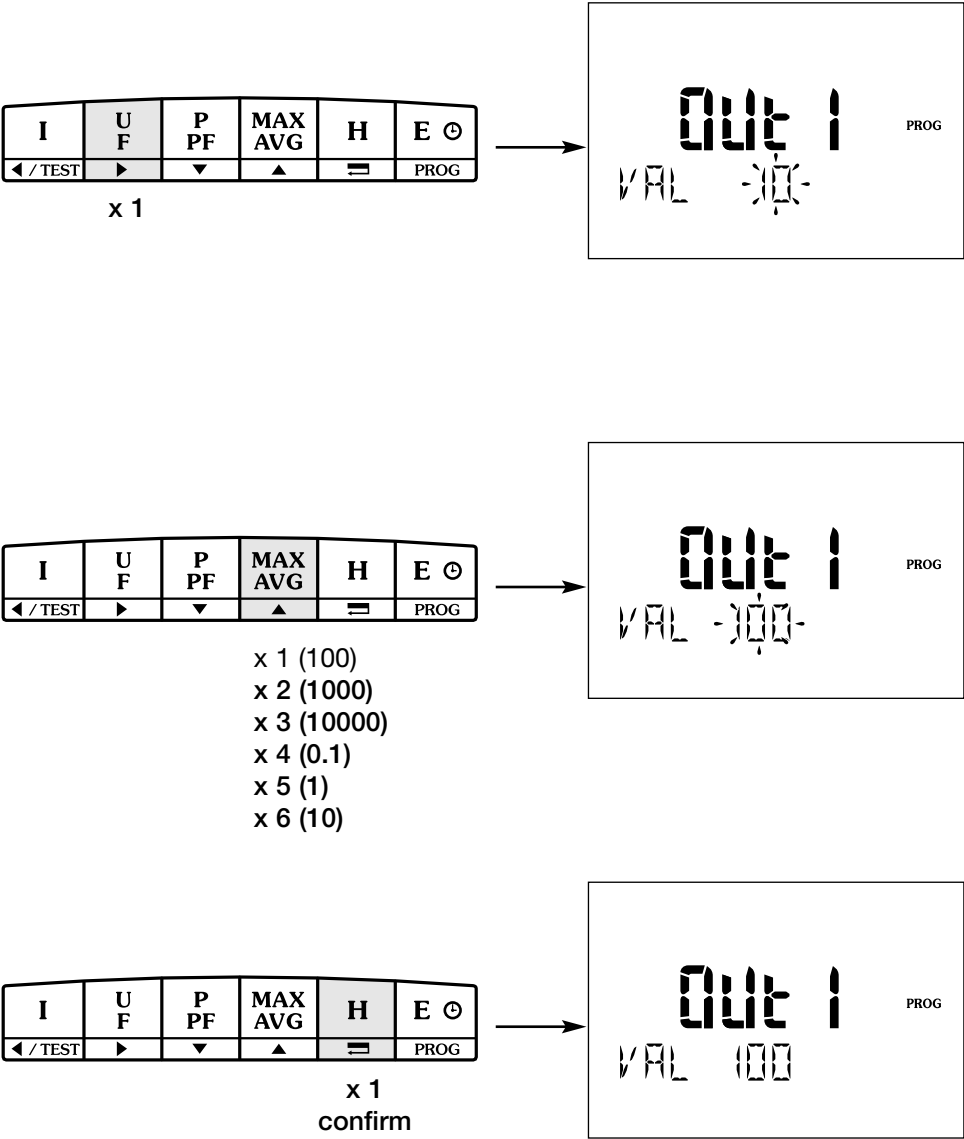
Following menu

PROGRAMMING

PULSE OUTPUT N°1TYPE - Example: TYPE = ER (kvarh)

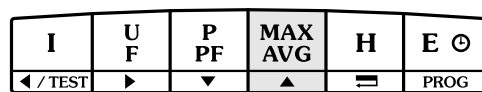
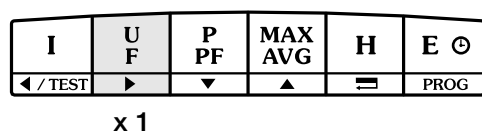


PULSE OUTPUT N°1 RATE - Exemple: VAL = 100 (1 = 100 kvarh)

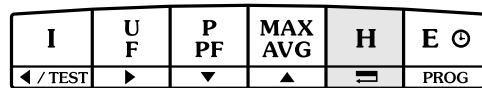


PROGRAMMING

PULSE OUTPUT N°1 DURATIONS - Example: DUR = 200 ms



- x 1 (200 ms)
- x 2 (300 ms)
- x 3 (400 ms)
- x 4 (500 ms)
- x 5 (600 ms)
- x 6 (700 ms)
- x 7 (800 ms)
- x 8 (900 ms)



x 1
confirm



PULSE OUTPUT N°2 PROGRAMMING

Proceed as for output n°1

TECHNICAL CHARACTERISTICS

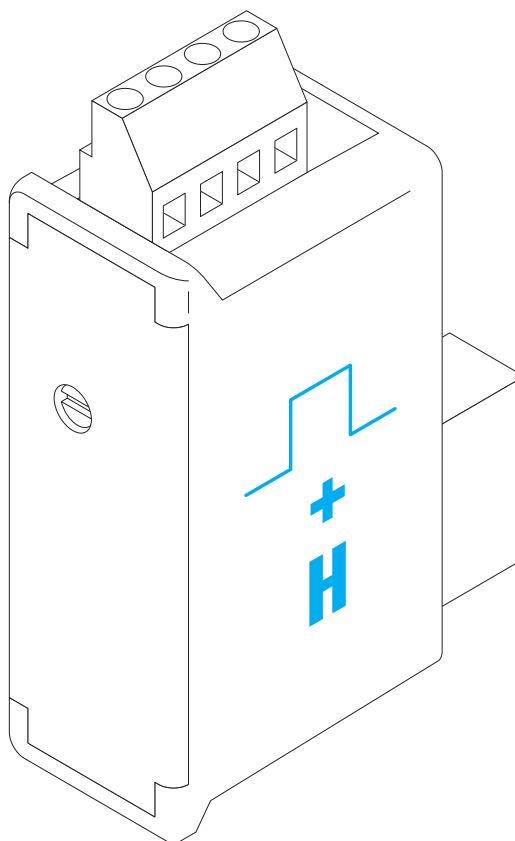
Reed relays	max. 100 V DC - 0.5 A - 10 VA
N° of operations	$\leq 10^8$
Galvanic insulation (AC insulation voltage)	2.5 kV
Certification	
UL 61010-1	N° file : E25 7746

GLOSSARY OF ABBREVIATIONS

Out 1... Out 2	Pulse output 1 and 2	VAL	Pulse value
TYPE	Pulse output allocation	DUR	Pulse duration
EA+	Positive active power (kWh+)	THD	Harmonic distortion rate
ER+	Positive reactive power(kvarh+)	H03 ... H25	Harmonic numbers 3 to 25
ES	Effective power(kVAh)		
EA-	Negative active power(- kWh)		
ER-	Negative reactive power (- kvarh)		

R-DPA96 A/AN - R-Module 2

2 Outputs kWh - kvarh - KVAh, Harmonics



PRELIMINARY OPERATIONS

Check the following points as soon as you receive the module option package:

- the packing is in good condition,
- the product has not been damaged during transit,
- the product reference number conforms to your order,
- the package contains the product,
- the operating instructions.

PRESENTATION

This optional module must be connected to the DPA96 A/AN (ref. 4825 0A40, 4825 0A41, 4825 1A40, 4825 1A41). This module allows the combining with the metering of active +/- (0 to 99 999 999 kWh), reactive +/- (0 to 99 999 999 kvarh) and apparent energy (0 to 99 999 999 kVAh) of two pulse outputs that can be configured according to value (0.1, 1, 10, 100 kWh, kvarh or kVAh and 1 or 10 MWh, Mvarh and MVAh) and duration (100 ms to 900 ms).

Display of the harmonic percentage per row for 3I, In, 3U, 3V up to row 25 (row 15 for DPA96 and DPA96A, software version 1.03) as well as thd 3I, thd In, thd 3U and thd 3V up to row 51.

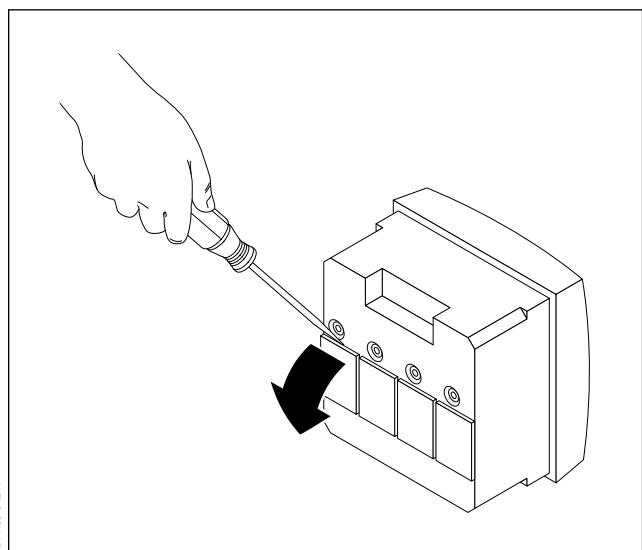
INSTALLATION

CONNECTION



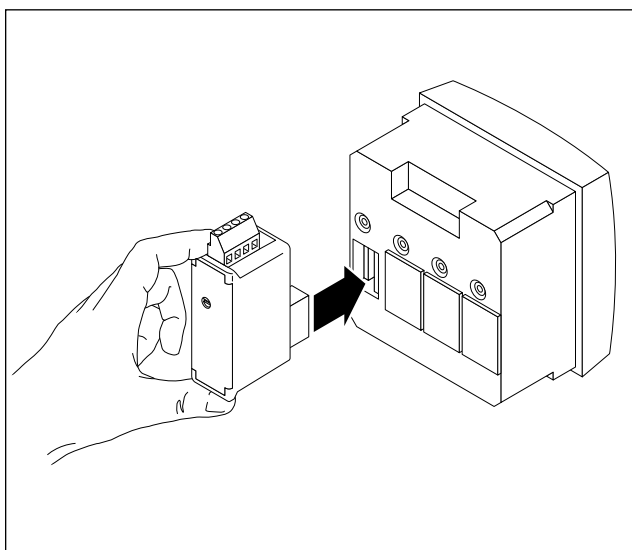
This DPA96 A/AN must be switched off.

1

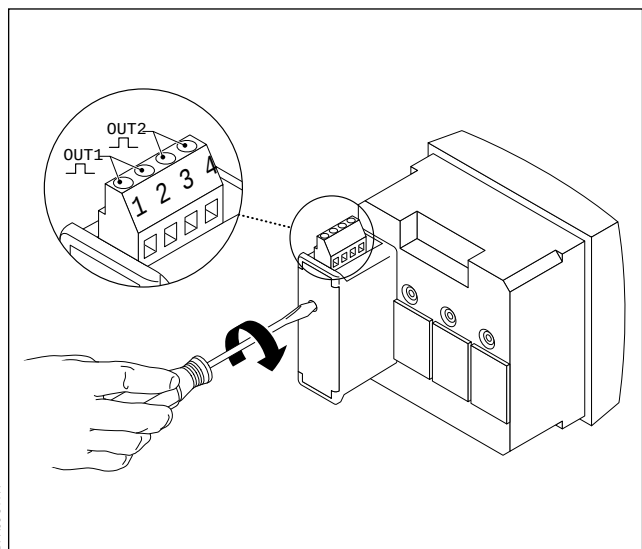


2

Fix the module



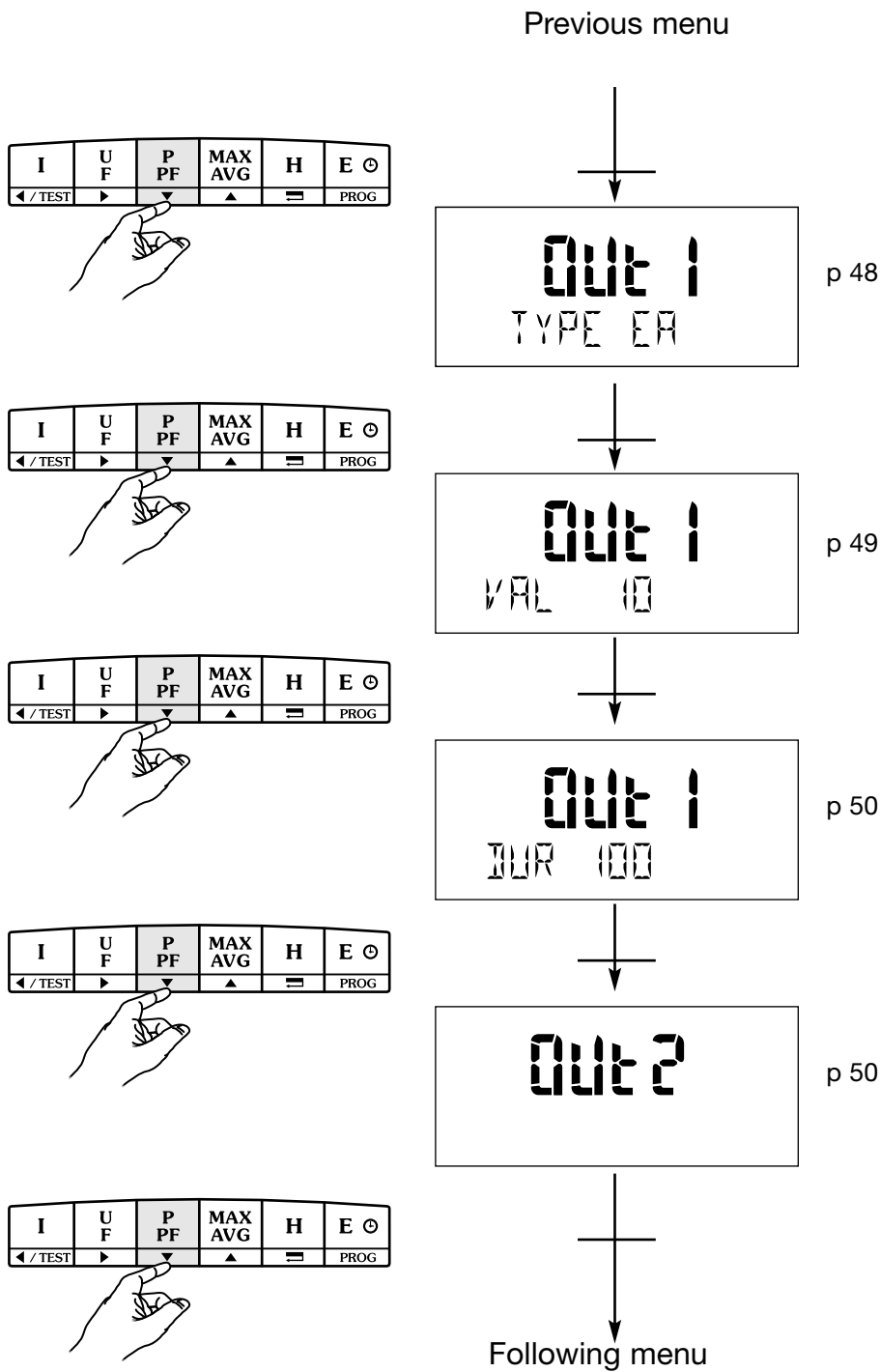
3



4

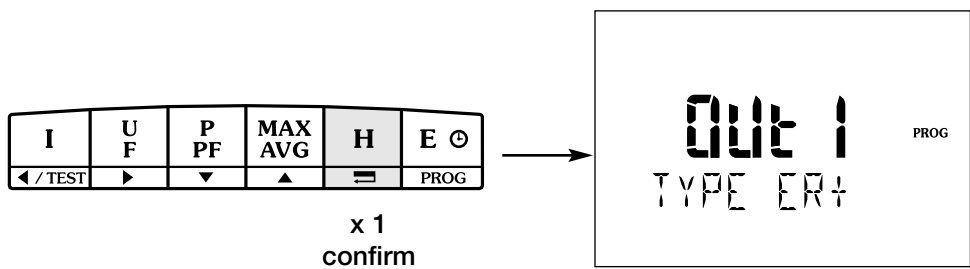
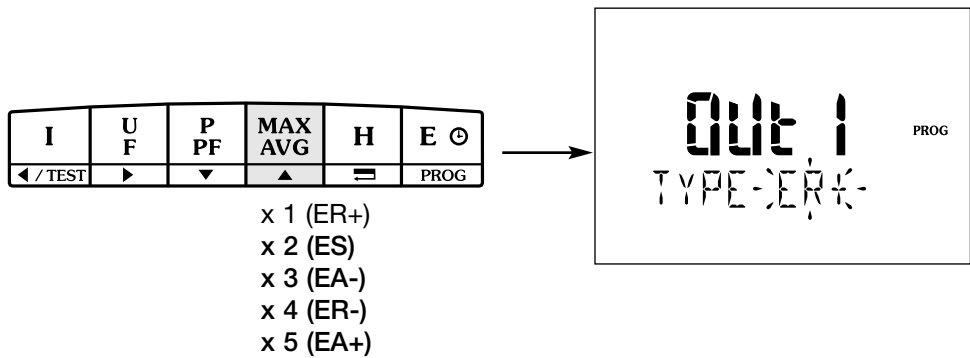
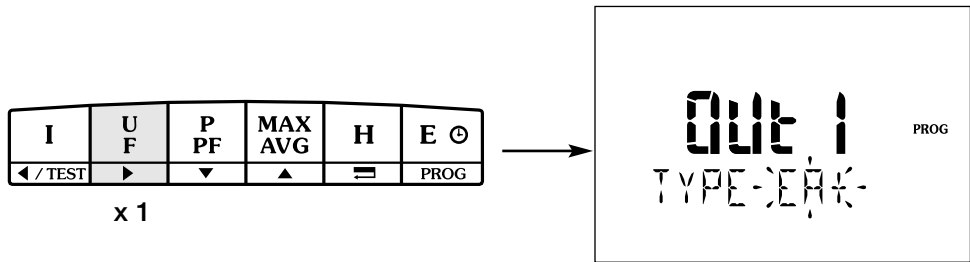
Follow indications when connecting the terminal.
Switch on voltage supply.

PROGRAMMING

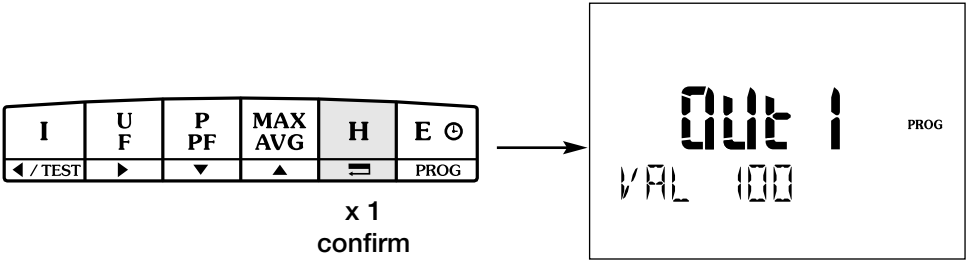
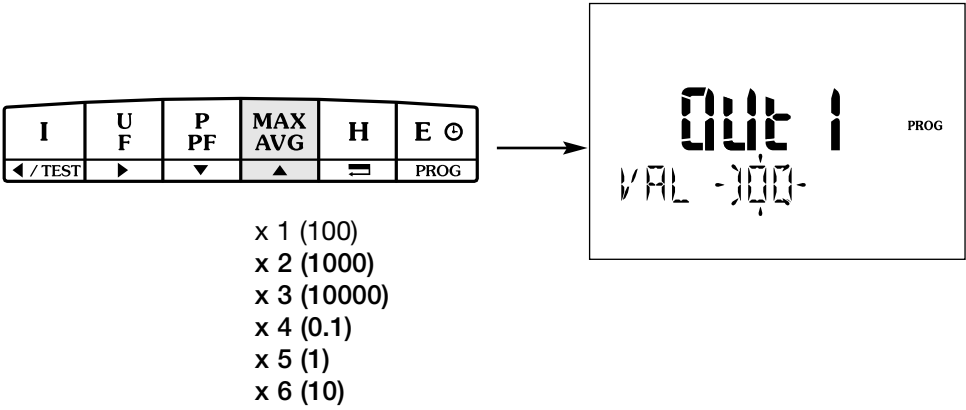
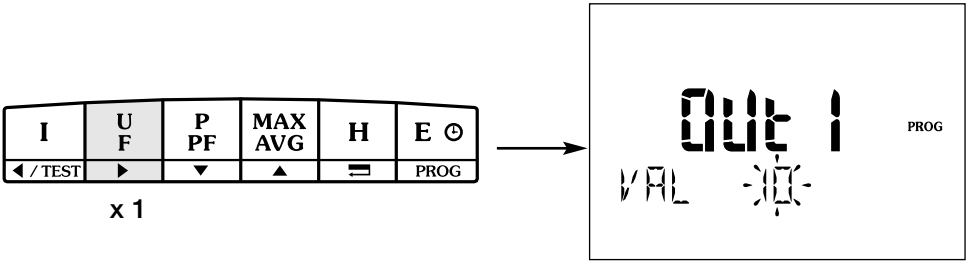


PROGRAMMING

PULSE OUTPUT N°1 TYPE - Example: TYPE = ER+ (kvarh)

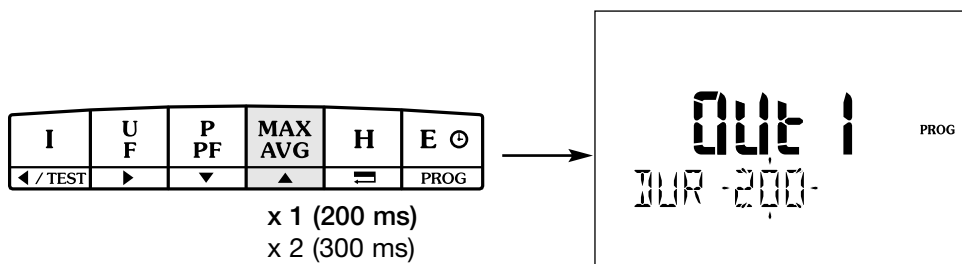
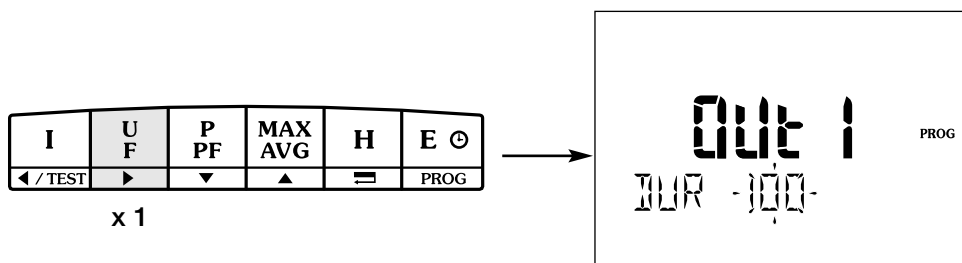


PULSE OUTPUT N°1 RATE - Example: VAL = 100 (1 = 100kvarh)

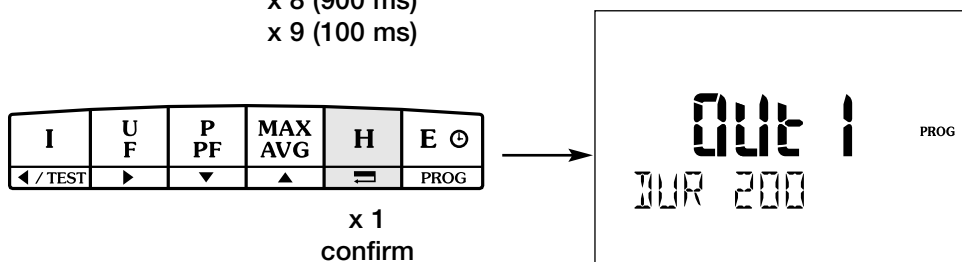


PROGRAMMING

PULSE OUTPUT N°1 DURATIONS - Example: DUR = 200 ms



x 1 (200 ms)
 x 2 (300 ms)
 x 3 (400 ms)
 x 4 (500 ms)
 x 5 (600 ms)
 x 6 (700 ms)
 x 7 (800 ms)
 x 8 (900 ms)
 x 9 (100 ms)

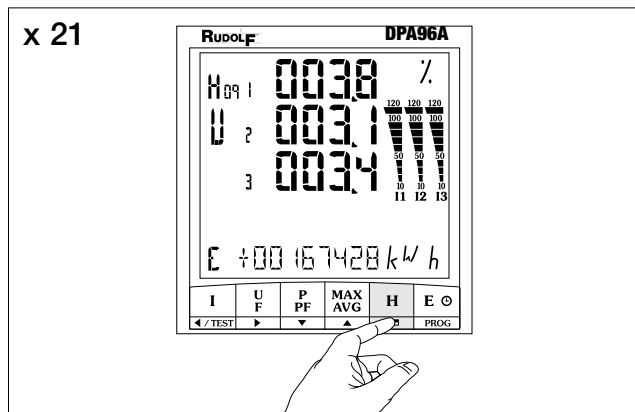
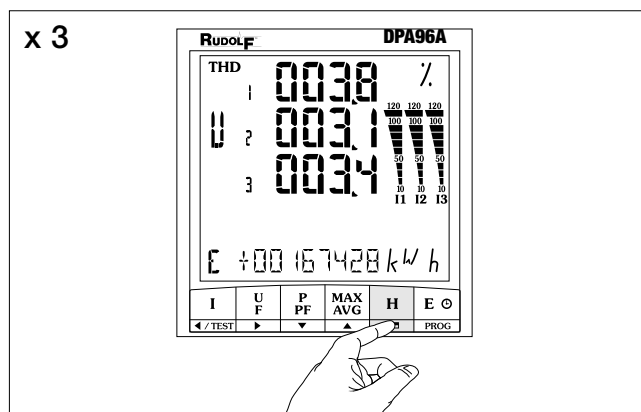
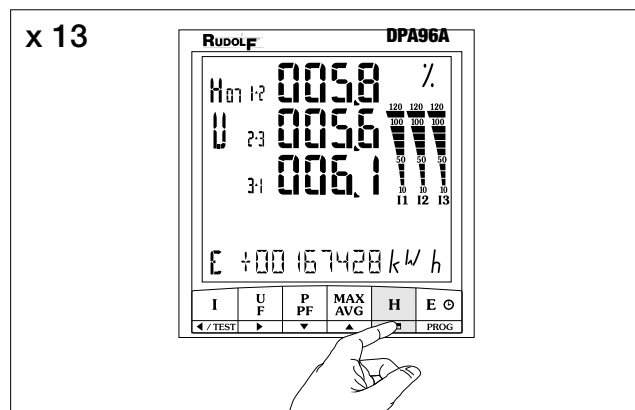
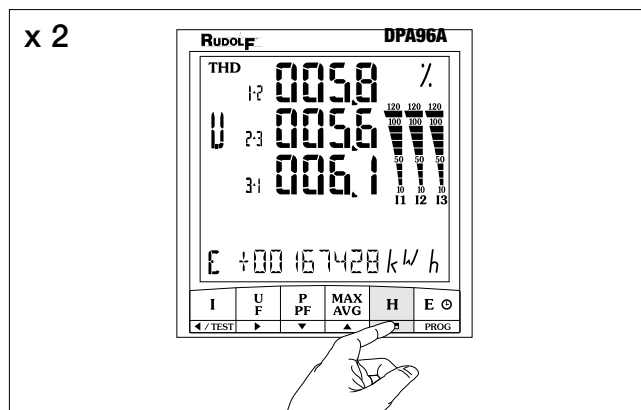
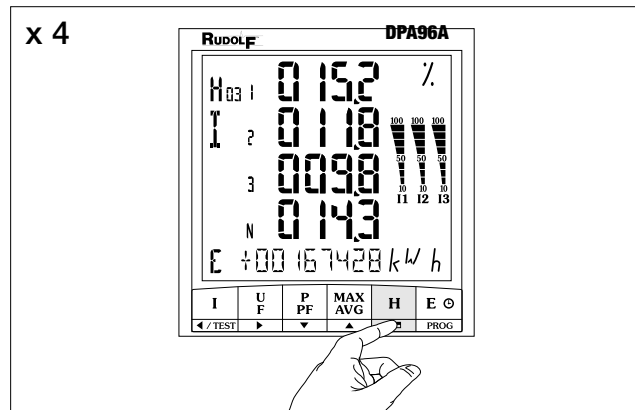
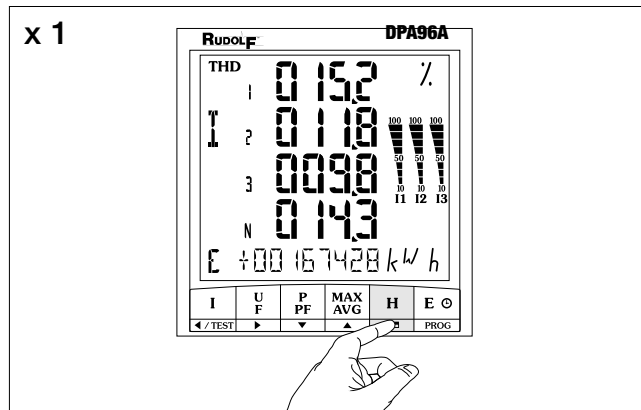


PULSE OUTPUT N°2 PROGRAMMING

Proceed as for output n°1

OPERATION

Display of the total distortion (thd) up to row 51 and the harmonics in current (HI) and voltage (HU and HV) per phase up to row 25.



TECHNICAL CHARACTERISTICS

Harmonics

Updating of %	1 sec
Accuracy	± 0.5 point
Minimum value displayed	1.6 %

Pulse outputs

Reed relays	max. 100 V DC - 0.5 A - 10 VA
N° of operations	≤ 10 ⁸
Galvanic insulation (AC insulation voltages)	2.5 kV

Certification

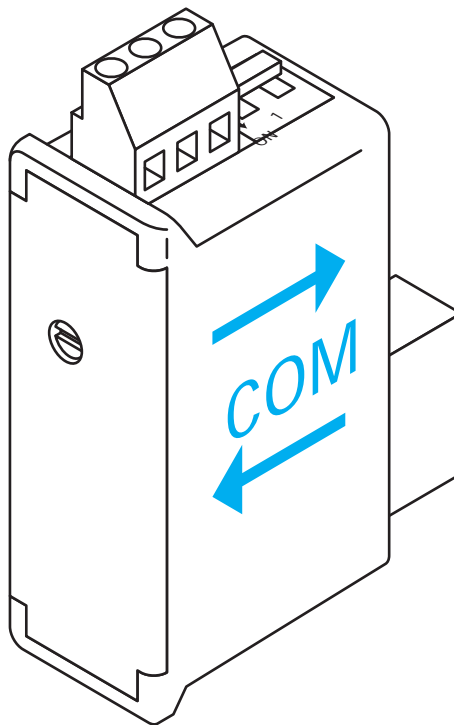
UL 61010-1	N° file : E25 7746
------------	--------------------

GLOSSARY OF ABBREVIATIONS

Out 1... Out 2	Pulse output 1 and 2	VAL	Pulse value
TYPE	Pulse output allocation	DUR	Pulse duration
EA+	Positive active power (kWh+)	THD	Total harmonic distortion
ER+	Positive reactive power(kvarh+)	H03 ... H25	Harmonic numbers 3 to 25
ES	Effective power(kVAh)		
EA-	Negative active power(- kWh)		
ER-	Negative reactive power (- kvarh)		

R-DPA96 A/AN - R-Module 3

RS485 – JBUS/MODBUS®



PRELIMINARY OPERATIONS

For personnel and product safety please read the contents of these operating instructions carefully before connecting.

Check the following points as soon as you receive the R-DPA96 A/AN package:

- the packing is in good condition,
- the product has not been damaged during transit,
- the product reference number conforms to your order,
- the package contains the product and the operating instructions.

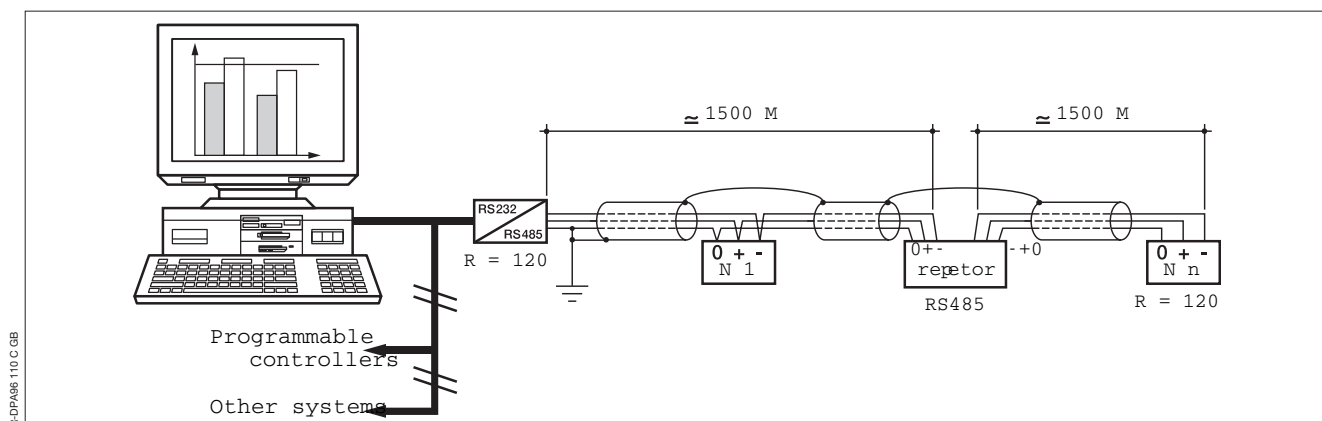
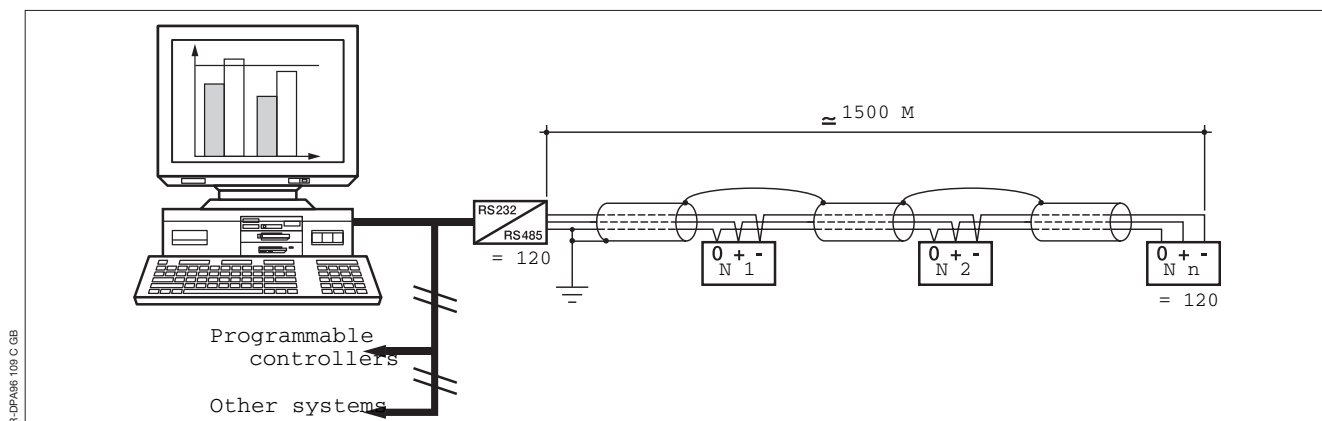
GENERAL INFORMATION

FUNCTIONS

The optional IP Communication module must be connected to the R-DPA96 A/AN (réf.: 48250A40, 48250A41, 48251A40, 48251A41). It provides an RS485 serial link (2 or 3 wires) with JBUS/MODBUS® protocol for the use of R-DPA96 A/AN from a PC or PLC.

GENERAL POINTS

For a standard configuration, an RS 485 link is used to connect up to 31 R-DPA96 with a PC or a PLC over a distance of 1500 metres, using JBUS/MODBUS® protocol.



Recommendations:

You should use a shielded twisted pair (LIYCY type). In a disturbed environment or large network (in terms of length) we recommend the use of 2 shielded pairs (type LIYCY-CY). In this case, one pair is used for the + and the -, and another pair, where the 2 wires are short-circuited, for the 0 V.

A repeater (1 channel) or an arrestor (4 channels) should be used if you intend to exceed the distance (1500 m) and/or maximum number (31) of R-DPA96. Please contact us for more information.

NB :

A 120 ohm resistance (found on the additional module) must be fixed at both ends of the link.

Other solutions are available (modem, optical fibre, etc.). Please contact us.

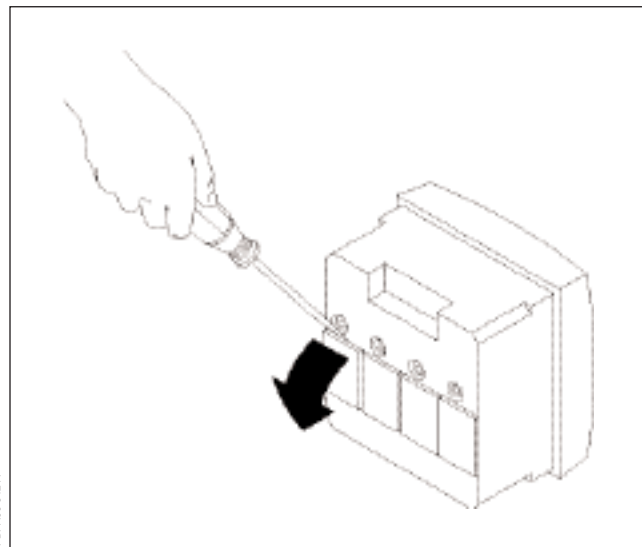
INSTALLATION

CONNECTION

The module is fitted onto the back of the R-DPA96 A/AN in one of the 4 positions provided.

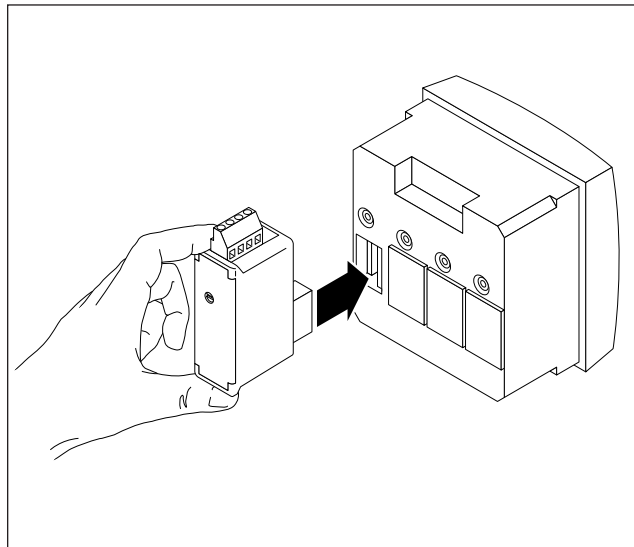


1

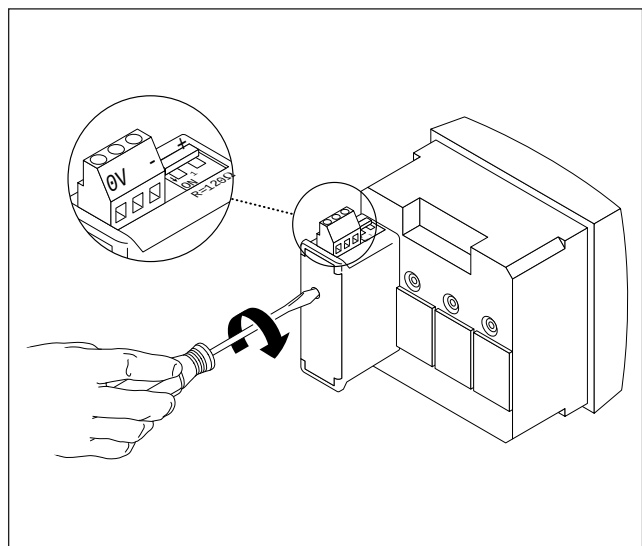


2

Fix the module in one of the four positions.



3



4

Follow indications when connecting the terminal.
Switch on voltage supply.

PROGRAMMING

I	U F	P PF	MAX AVG	H	E ☉
◀ / TEST	▶	▼	▲	≡	PROG



Previous menu



CON
AIR 005

— p.59

I	U F	P PF	MAX AVG	H	E ☉
◀ / TEST	▶	▼	▲	≡	PROG



CON
RTS 9600

— p.59

I	U F	P PF	MAX AVG	H	E ☉
◀ / TEST	▶	▼	▲	≡	PROG



CON
PAR NO

— p.60

I	U F	P PF	MAX AVG	H	E ☉
◀ / TEST	▶	▼	▲	≡	PROG



CON
STOP

— p.60

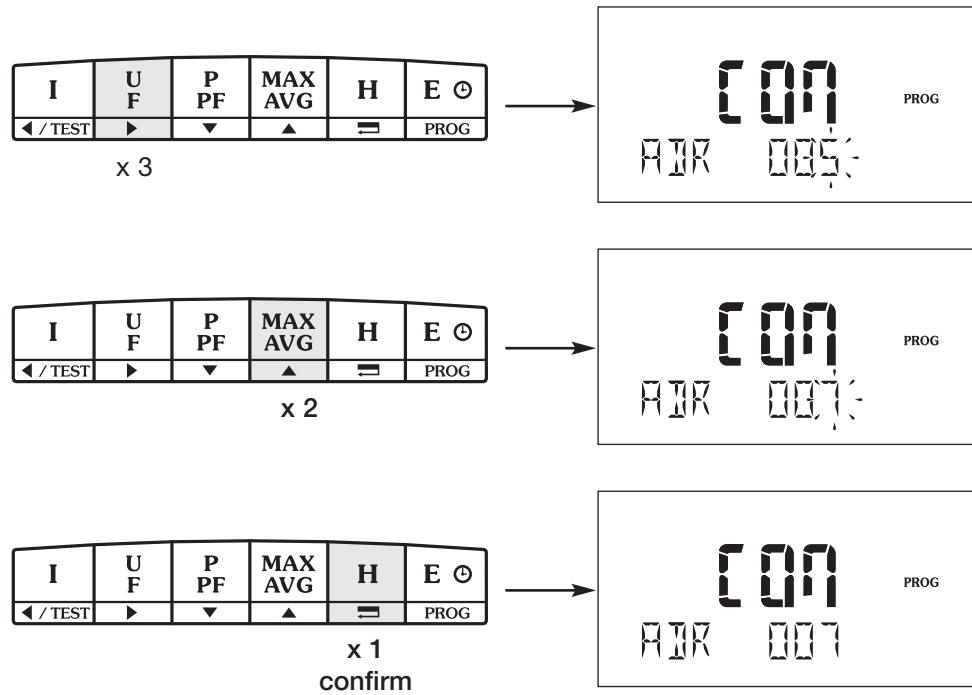
I	U F	P PF	MAX AVG	H	E ☉
◀ / TEST	▶	▼	▲	≡	PROG



Following menu

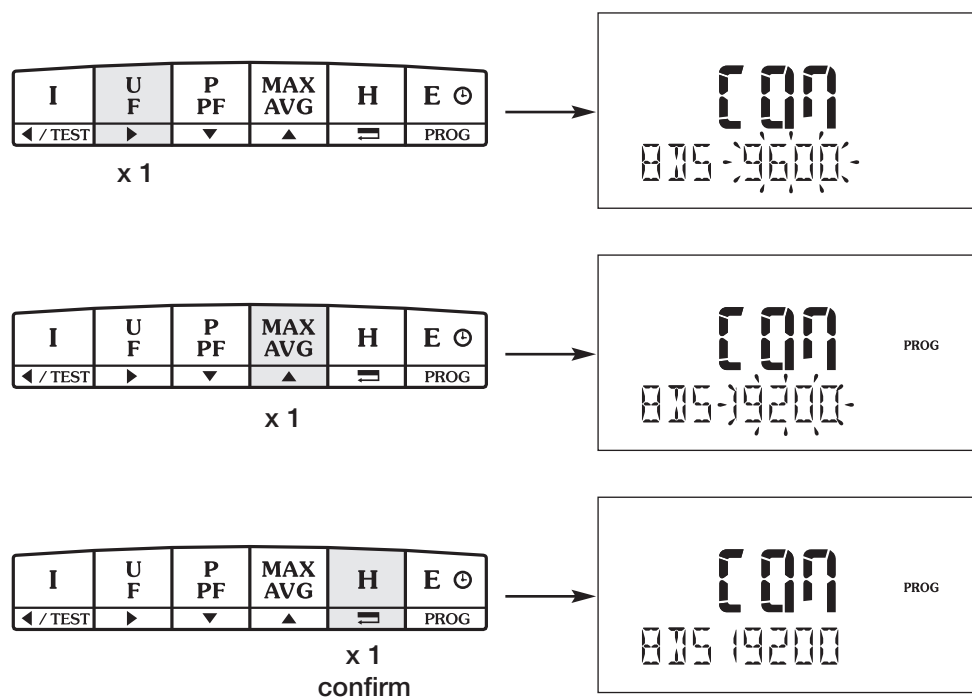
COMMUNICATION ADDRESS

> Example : COM ADR = 7



COMMUNICATION SPEED

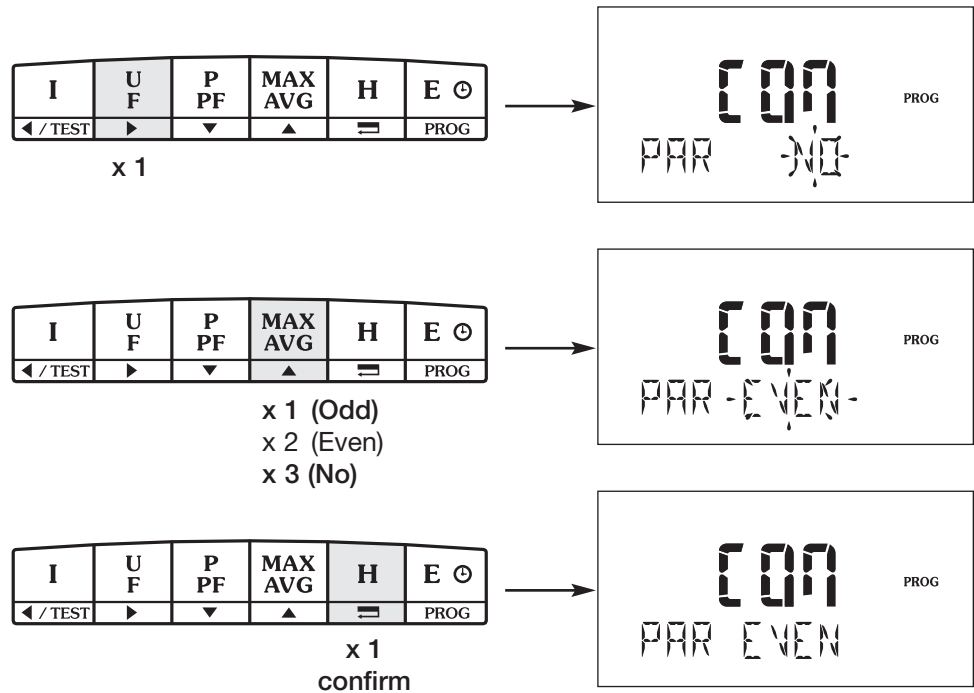
> Example : BDS = 19200 bauds



PROGRAMMATION

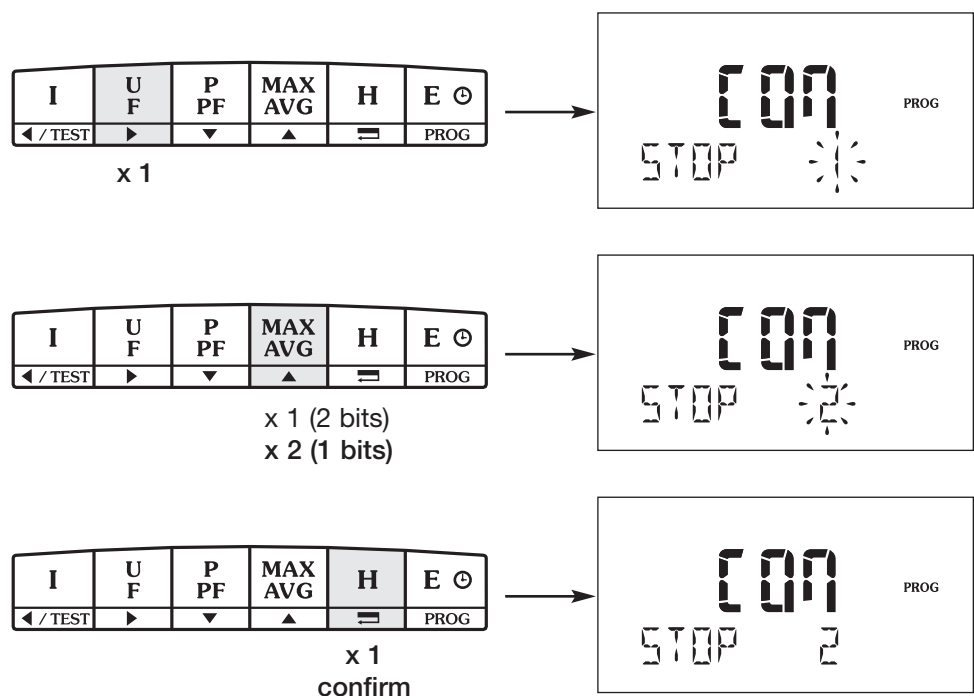
COMMUNICATION PARITY

> Example : PAR = Even



COMMUNICATION STOP BIT

> Example : STOP = 2



COMMUNICATION

The JBUS/MODBUS® used by the R-DPA96 A/AN involves a dialogue using a master-slave hierarchical structure. There are two possible dialogues:

- the master communicates with a slave (R-DPA96) and waits for its reply
- the master communicates with all the slaves (R-DPA96) without waiting for their reply.

The mode of communication is the RTU (Remote Terminal Unit) using hexadecimal characters of at least 8 bits.

THE STANDARD COMMUNICATIONS FRAME

The standard communications frame consists of:



According to the JBUS/MODBUS® protocol, transmission time must be less than 3 silences, i.e. the emission time of 3 characters so that the message is processed by the R-DPA96.

To correctly use information, the following functions are important:

- 3 : to read n words (maximum 128).
- 6 : to write one word.
- 8 : to diagnose exchanges between the master and the slave via meters 1, 3, 4, 5 and 6.
- 16 : to write n words (maximum 128).

NB:

When selecting slave address 0, a message is sent to all the instruments present on the network (only for functions 6 and 16).

Comment :

The response time (time out question/answer) is 250 ms maximum

COMMUNICATION

LIST OF PARAMETERS TO BE DISPLAYED (FUNCTION 3)

Table of values with allocated current and voltage winf-ding ratios on 2 words

Decimal address	Hexa. address	Number of words	Text	Unit
768	300	2	Phase 1 current	mA
770	302	2	Phase 2 current	mA
772	304	2	Phase 3 current	mA
774	306	2	Neutral current	mA
776	308	2	Phase to phase voltage U12	V/100
778	30A	2	Phase to phase voltage U23	V/100
780	30C	2	Phase to phase voltage U31	V/100
782	30E	2	Phase to neutral voltage phase 1	V/100
784	310	2	Phase to neutral voltage phase 2	V/100
786	312	2	Phase to neutral voltage phase 3	V/100
788	314	2	Frequency	Hz/100
790	316	2	Σ active power +/-	kW/100
792	318	2	Σ reactive power +/-	kvar/100
794	31A	2	Σ apparent power	kVA/100
796	31C	2	Σ power factor -: leading and +: lagging	0.001
798	31E	2	Active power phase 1 +/-	kW/100
800	320	2	Active power phase 2 +/-	kW/100
802	322	2	Active power phase 3 +/-	kW/100
804	324	2	Reactive power phase 1 +/-	kvar/100
806	326	2	Reactive power phase 2 +/-	kvar/100
808	328	2	Reactive power phase 3 +/-	kvar/100
810	32A	2	Apparent power phase 1	kVA/100
812	32C	2	Apparent power phase 2	kVA/100
814	32E	2	Apparent power phase 3	kVA/100
816	330	2	Power factor phase 1 -: leading and +: lagging	0.001
818	332	2	Power factor phase 2 -: leading and +: lagging	0.001
820	334	2	Power factor phase 3 -: leading and +: lagging	0.001
822	336	2	avg I1	mA
824	338	2	avg I2	mA
826	33A	2	avg I3	mA
828	33C	2	avg Σ active power +	kW/100
830	33E	2	avg Σ active power -	kW/100
832	340	2	avg Σ reactive power +	kvar/100
834	342	2	avg Σ reactive power -	kvar/100
836	344	2	avg Σ apparent power	kVA/100
838	346	2	max/avg I1	mA
840	348	2	max/avg I2	mA
842	34A	2	max/avg I3	mA
844	34C	2	max/avg Σ active power +	kW/100
846	34E	2	max/avg Σ active power -	kW/100
848	350	2	max/avg Σ reactive power +	kvar/100
850	352	2	max/avg Σ reactive power -	kvar/100
852	354	2	max/avg Σ apparent power	kVA/100
854	356	2	hour meter	1/100 h
856	358	2	Active energy +	kWh
858	35A	2	Reactive energy +	kvarh
860	35C	2	Apparent energy	kVAh
862	35E	2	Active energy -	kWh
864	360	2	Reactive energy -	kvarh

LIST OF PARAMETERS TO BE DISPLAYED (FUNCTION 3)

Address available with the Monitoring or Control/Command option

Decimal address	Hexa. address	Number of words	Text	Unit
866	362	2	Input pulse meter 1	–
868	364	2	Input pulse meter 2	–
870	366	2	Number of impulse meters	–
872	368	2	Current alarm : 0 : no alarm 1 : I 2 : U 3: $\Sigma P+$ 4: $\Sigma Q+$ 5: ΣS 6: F 7 : ΣPFL 8 : thd I 9 : thd U 10 : In 11 : HOUr 12 : V 13 : thd In 14 : thd V 15 : $\Sigma P-$ 16 : $\Sigma Q-$ 17 : ΣPFC	–
874	36A	2	Current overrun : 0 : no alarm 1 : I 2 : U 3: $\Sigma P+$ 4: $\Sigma Q+$ 5: ΣS 6: F 7 : ΣPFL 8 : thd I 9 : thd U 10 : In 11 : HOUr 12 : V 13 : thd In 14 : thd V 15 : $\Sigma P-$ 16 : $\Sigma Q-$ 17 : ΣPFC	–
876	36C	2	Number of inputs-outputs Low-order: number of inputs High-order: number of outputs	–
878	36E	2	Status of inputs-outputs 0 : status input 1 (0 = open, 1 = closed) bit 1 : status input 2 (0 = open, 1 = closed) bit 2 : status input 3 (0 = open, 1 = closed) bit 3 : status input 4 (0 = open, 1 = closed) bit 4 : status input 5 (0 = open, 1 = closed) bit 5 : status input 6 (0 = open, 1 = closed) bit 16 : status output 1 (0 = open, 1 = closed) bit 17 : status output 2 (0 = open, 1 = closed) bit 18 : status output 3 (0 = open, 1 = closed) bit 19 : status output 4 (0 = open, 1 = closed) bit 20 : status output 5 (0 = open, 1 = closed) bit 21 : status output 6 (0 = open, 1 = closed)	–

COMMUNICATION

LIST OF PARAMETERS TO BE DISPLAYED (FUNCTION 3)

Instant value display

Decimal address	Hexa. address	Number of words	Text	Unit
880	370	2	System value for current	mA
882	372	2	System value for phase-to-phase voltage	V/100
884	374	2	System value for phase-to-neutral voltage	V/100
886	376	2	avg U12	V/100
888	378	2	avg U23	V/100
890	37A	2	avg U31	V/100
892	37C	2	avg V1	V/100
894	37E	2	avg V2	V/100
896	380	2	avg V3	V/100
898	382	2	avg F	Hz/100
900	384	2	max/avg U12	V/100
902	386	2	max/avg U23	V/100
904	388	2	max/avg U31	V/100
906	38A	2	max/avg V1	V/100
908	38C	2	max/avg V2	V/100
910	38E	2	max/avg V3	V/100
912	390	2	max/avg F	Hz/100
914	392	2	avg In	mA
916	394	2	max/avg In	mA
918	396	2	Mean positive active power between 2 signals	0.1 kW
920	398	2	Mean negative active power between 2 signals	0.1 kW
922	39A	2	Mean positive reactive power between 2 signals	0.1 kvar
924	39C	2	Mean negative reactive power between 2 signals	0.1 kvar

Zone size: 158 words (decimal) or 9E (hexadecimal).

Example:

To display all the values for R-DPA96 number 5 in one inquiry, the following frame should be sent:

Slave	Function	High-order address	Low-order address	High-order word n°	Low-order word n°	CRC 16
05	03	03	00	00	9E	C5A7

LIST OF PARAMETERS TO BE DISPLAYED (FUNCTION 3)

Table of values without allocated current and voltage winding ratios on 1 word

Decimal address	Hexa. address	Number of words	Text	Unit
1792	700	1	Phase 1 current	mA
1793	701	1	Phase 2 current	mA
1794	702	1	Phase 3 current	mA
1795	703	1	Neutral current	mA
1796	704	1	Phase to phase voltage U12	V/10
1797	705	1	Phase to phase voltage U23	V/10
1798	706	1	Phase to phase voltage U31	V/10
1799	707	1	Phase to neutral voltage phase 1	V/10
1800	708	1	Phase to neutral voltage phase 2	V/10
1801	709	1	Phase to neutral voltage phase 3	V/10
1802	70A	1	Frequency	Hz/100
1803	70B	1	Σ active power +/-	kW/100
1804	70C	1	Σ reactive power +/-	kvar/100
1805	70D	1	Σ apparent power +/-	kVA/100
1806	70E	1	Σ power factor L/C -: leading and +: lagging	0.001
1807	70F	1	Active power phase 1 +/-	kW/100
1808	710	1	Active power phase 2 +/-	kW/100
1809	711	1	Active power phase 3 +/-	kW/100
1810	712	1	Reactive power phase 1 +/-	kvar/100
1811	713	1	Reactive power phase 2 +/-	kvar/100
1812	714	1	Reactive power phase 3 +/-	kvar/100
1813	715	1	Apparent power phase 1	kVA/100
1814	716	1	Apparent power phase 2	kVA/100
1815	717	1	Apparent power phase 3	kVA/100
1816	718	1	Power factor phase 1 L/C -: leading and +: lagging	0.001
1817	719	1	Power factor phase 2 L/C -: leading and +: lagging	0.001
1818	71A	1	Power factor phase 3 L/C -: leading and +: lagging	0.001
1819	71B	1	avg I1	mA
1820	71C	1	avg I2	mA
1821	71D	1	avg I3	mA
1822	71E	1	avg Σ active power +	kW/100
1823	71F	1	avg Σ active power -	kW/100
1824	720	1	avg Σ reactive power +	kvar/100
1825	721	1	avg Σ reactive power -	kvar/100
1826	722	1	avg Σ apparent power	kVA/100
1827	723	1	max/avg I1	mA
1828	724	1	max/avg I2	mA
1829	725	1	max/avg I3	mA
1830	726	1	max/avg Σ active power +	kW/100
1831	727	1	max/avg Σ active power -	kW/100
1832	728	1	max/avg Σ reactive power +	kvar/100
1833	729	1	max/avg Σ reactive power -	kvar/100
1834	72A	1	max/avg Σ apparent power	kVA/100
1835	72B	1	Active energy + < 10000	kWh

COMMUNICATION

LIST OF PARAMETERS TO BE DISPLAYED (FUNCTION 3)

Decimal address	Hexa. address	Number of words	Text	Unit
1836	72C	1	Active energy + > 10000	kWh
1837	72D	1	Reactive energy + < 10000	kvarh
1838	72E	1	Reactive energy + > 10000	kvarh
1839	72F	1	Apparent energy < 10000	kVAh
1840	730	1	Apparent energy > 10000	kVAh
1841	731	1	Active energy - < 10000	kWh
1842	732	1	Active energy - >10000	kWh
1843	733	1	Reactive energy - < 10000	kvarh
1844	734	1	Reactive energy - > 10000	kvarh
1845	735	1	Input pulse meter 1 < 10000	–
1846	736	1	Input pulse meter 1 > 10000	–
1847	737	1	Input pulse meter 2 < 10000	–
1848	738	1	Input pulse meter 2 > 10000	–
1849	739	1	Input pulse meter 3 < 10000	–
1850	73A	1	Input pulse meter 3 > 10000	–
1851	73B	1	Input pulse meter 4 < 10000	–
1852	73C	1	Input pulse meter 4 > 10000	–
1853	73D	1	Input pulse meter 5 < 10000	–
1854	73E	1	Input pulse meter 5 > 10000	–
1855	73F	1	Input pulse meter 6 < 10000	–
1856	740	1	Input pulse meter 6 > 10000	–
1857	741	1	Average value of currents	mA
1858	742	1	Average value of phase to phase voltages	V/10
1859	743	1	Average value of phase to neutral voltages	V/10
1860	744	1	avg U12	V/10
1861	745	1	avg U23	V/10
1862	746	1	avg U31	V/10
1863	747	1	avg V1	V/10
1864	748	1	avg V2	V/10
1865	749	1	avg V3	V/10
1866	74A	1	avg F	Hz/100
1867	74B	1	max/avg U12	V/10
1868	74C	1	max/avg U23	V/10
1869	74D	1	max/avg U31	V/10
1870	74E	1	max/avg V1	V/10
1871	74F	1	max/avg V2	V/10
1872	750	1	max/avg V3	V/10
1873	751	1	max/avg F	Hz/100
1874	752	1	thd I1	0.10%
1875	753	1	thd I2	0.10%
1876	754	1	thd I3	0.10%
1877	755	1	thd In	0.10%
1878	756	1	thd U12	0.10%
1879	757	1	thd U23	0.10%
1880	758	1	thd U31	0.10%
1881	759	1	thd V1	0.10%
1882	75A	1	thd V2	0.10%
1883	75B	1	thd V3	0.10%

LIST OF PARAMETERS TO BE DISPLAYED (FUNCTION 3)

Decimal address	Hexa. address	Number of words	Text	Unit
1884	75C	1	Mean positive active power between 2 signals	0.1 W
1885	75D	1	Mean negative active power between 2 signals	0.1 W
1886	75E	1	Mean positive reactive power between 2 signals	0.1 var
1887	75F	1	Mean negative reactive power between 2 signals	0.1 var
1888	760	1	Reserved	–
1889	761	1	Reserved	–
1890	762	1	Average values In	mA
1891	763	1	In max	mA

Zone size: 100 words (decimal) or 64 (hexadecimal).

Example:

To read 177 645 kWh, the following message should be sent :

Slave	Function	High-order address	Low-order address	High-order word n°	Low-order word n°	CRC 16
05	03	07	2B	00	02	B4F3

R-DPA96 A40/A41 reply:

Slave	Function	Number of bytes	Word 1 < 10000	Word 2 > 10000	CRC 16
05	03	04	IDDD 7645	11 17	6FD6

Example:

To display all the values for R-DPA96 number 5 in one inquiry, the following frame should be sent:

Slave	Function	High-order address	Low-order address	High-order word n°	Low-order word n°	CRC 16
05	03	07	00	00	64	44D1

COMMUNICATION

LIST OF PARAMETERS TO BE DISPLAYED (FUNCTION 3)

Alarm event log

Decimal address	Hexa. address	Number of words	Text	Unit
1280	500	1	Current alarm OUT 1 lower threshold: 0 : no alarm 1 : I1 2 : I2 3 : I3 4 : In 5 : U12 6 : U23 7 : U31 8 : $\Sigma P+$ 9 : $\Sigma Q+$ 10 : ΣS 11 : F 12 : ΣPFL 15 : thd I1 16 : thd I2 17 : thd I3 18 : thd U12 19 : thd U23 20 : thd U31 21 : HOUR 22 : V1 23 : V2 24 : V3 25 : thd In 26 : thd V1 27 : thd V2 28 : thd V3 29 : $\Sigma P-$ 30 : $\Sigma Q-$ 31 : ΣPFC	–
1281	501	2	Current alarm OUT 1 lower threshold value	–
1283	503	1	Current alarm OUT 1 upper threshold: 0 : no alarm 1 : I1 2 : I2 3 : I3 4 : In 5 : U12 6 : U23 7 : U31 8 : $\Sigma P+$ 9 : $\Sigma Q+$ 10 : ΣS 11 : F 12 : ΣPFL 15 : thd I1 16 : thd I2 17 : thd I3 18 : thd U12 19 : thd U23 20 : thd U31 21 : HOUR 22 : V1	–

LIST OF PARAMETERS TO BE DISPLAYED (FUNCTION 3)

Alarm event log (continued)

Decimal address	Hexa. address	Number of words	Text	Unit
			23 : V2 24 : V3 25 : thd In 26 : thd V1 27 : thd V2 28 : thd V3 29 : ΣP - 30 : ΣQ - 31 : ΣPFC	
1284	504	2	Current alarm OUT 1 upper threshold value	–
1286	506	1	Duration	s.
1287	507	1	Alarm 1 OUT 1 ower threshold: 0 : no alarm 1 : I1 2 : I2 3 : I3 4 : In 5 : U12 6 : U23 7 : U31 8 : ΣP + 9 : ΣQ + 10 : ΣS 11 : F 12 : ΣPFL 15 : thd I1 16 : thd I2 17 : thd I3 18 : thd U12 19 : thd U23 20 : thd U31 21 : HOUR 22 : V1 23 : V2 24 : V3 25 : thd In 26 : thd V1 27 : thd V2 28 : thd V3 29 : ΣP - 30 : ΣQ - 31 : ΣPFC	–
1288	508	2	Alarm 1 OUT 1ower threshold value	–
1290	50A	1	Alarm 1 OUT 1 threshold value: 0 : no alarm 1 : I1 2 : I2 3 : I3 4 : In 5 : U12 6 : U23 7 : U31 8 : ΣP + 9 : ΣQ +	–

COMMUNICATION

LIST OF PARAMETERS TO BE DISPLAYED (FUNCTION 3)

Alarm event log (continued)

Decimal address	Hexa. address	Number of words	Text	Unit
			10 : ΣS 11 : F 12 : ΣPFL 15 : thd I1 16 : thd I2 17 : thd I3 18 : thd U12 19 : thd U23 20 : thd U31 21 : HOUR 22 : V1 23 : V2 24 : V3 25 : thd In 26 : thd V1 27 : thd V2 28 : thd V3 29 : $\Sigma P-$ 30 : $\Sigma Q-$ 31 : ΣPFC	
1291	50B	2	Alarm 1 OUT 1 upper threshold value	–
1293	50D	1	Duration	s.
1294	50E	1	Alarm 2 OUT 1 lower threshold 0 : no alarm 1 : I1 2 : I2 3 : I3 4 : In 5 : U12 6 : U23 7 : U31 8 : $\Sigma P+$ 9 : $\Sigma Q+$ 10 : ΣS 11 : F 12 : ΣPFL 15 : thd I1 16 : thd I2 17 : thd I3 18 : thd U12 19 : thd U23 20 : thd U31 21 : HOUR 22 : V1 23 : V2 24 : V3 25 : thd In 26 : thd V1 27 : thd V2 28 : thd V3 29 : $\Sigma P-$ 30 : $\Sigma Q-$ 31 : ΣPFC	–
1295	50F	2	Alarm 2 OUT 1 lower threshold value	–

LIST OF PARAMETERS TO BE DISPLAYED (FUNCTION 3)

Alarm event log (continued)

Decimal address	Hexa. address	Number of words	Text	Unit
1297	511	1	Alarm 2 OUT 1 threshold value: 0 : no alarm 1 : I1 2 : I2 3 : I3 4 : In 5 : U12 6 : U23 7 : U31 8 : $\Sigma P+$ 9 : $\Sigma Q+$ 10 : ΣS 11 : F 12 : ΣPFL 15 : thd I1 16 : thd I2 17 : thd I3 18 : thd U12 19 : thd U23 20 : thd U31 21 : HOUR 22 : V1 23 : V2 24 : V3 25 : thd In 26 : thd V1 27 : thd V2 28 : thd V3 29 : $\Sigma P-$ 30 : $\Sigma Q-$ 31 : ΣPFC	–
1298	512	2	Alarm 2 OUT 1 upper threshold value	–
1300	514	1	Duration	s.
1301	515	1	Alarm 3 OUT 1 lower threshold 0 : no alarm 1 : I1 2 : I2 3 : I3 4 : In 5 : U12 6 : U23 7 : U31 8 : $\Sigma P+$ 9 : $\Sigma Q+$ 10 : ΣS 11 : F 12 : ΣPFL 15 : thd I1 16 : thd I2 17 : thd I3 18 : thd U12 19 : thd U23 20 : thd U31 21 : HOUR	–

COMMUNICATION

LIST OF PARAMETERS TO BE DISPLAYED (FUNCTION 3)

Alarm event log (continued)

Decimal address	Hexa. address	Number of words	Text	Unit
			22 : V1 23 : V2 24 : V3 25 : thd In 26 : thd V1 27 : thd V2 28 : thd V3 29 : ΣP - 30 : ΣQ - 31 : ΣPFC	
1302	516	2	Alarm 3 OUT 1 lower threshold value	–
1304	518	1	Alarm 3 OUT 1 threshold value: 0 : no alarm 1 : I1 2 : I2 3 : I3 4 : In 5 : U12 6 : U23 7 : U31 8 : ΣP + 9 : ΣQ + 10 : ΣS 11 : F 12 : ΣPFL 15 : thd I1 16 : thd I2 17 : thd I3 18 : thd U12 19 : thd U23 20 : thd U31 21 : HOUR 22 : V1 23 : V2 24 : V3 25 : thd In 26 : thd V1 27 : thd V2 28 : thd V3 29 : ΣP - 30 : ΣQ - 31 : ΣPFC	–
1305	519	2	Alarm 3 OUT 1 upper threshold value	–
1307	51B	1	Duration	s.
1308	51C	1	Current alarm OUT 2 lower threshold: 0 : no alarm 1 : I1 2 : I2 3 : I3 4 : In 5 : U12 6 : U23 7 : U31 8 : ΣP +	–

LIST OF PARAMETERS TO BE DISPLAYED (FUNCTION 3)

Alarm event log (continued)

Decimal address	Hexa. address	Number of words	Text	Unit
			9 : $\Sigma Q+$ 10 : ΣS 11 : F 12 : ΣPFL 15 : thd I1 16 : thd I2 17 : thd I3 18 : thd U12 19 : thd U23 20 : thd U31 21 : HOUR 22 : V1 23 : V2 24 : V3 25 : thd In 26 : thd V1 27 : thd V2 28 : thd V3 29 : $\Sigma P-$ 30 : $\Sigma Q-$ 31 : ΣPFC	
1309	51D	2	Current alarm OUT 2 lower threshold value	–
1311	51F	1	Current alarm OUT 2 upper threshold: 0 : no alarm 1 : I1 2 : I2 3 : I3 4 : In 5 : U12 6 : U23 7 : U31 8 : $\Sigma P+$ 9 : $\Sigma Q+$ 10 : ΣS 11 : F 12 : ΣPFL 15 : thd I1 16 : thd I2 17 : thd I3 18 : thd U12 19 : thd U23 20 : thd U31 21 : HOUR 22 : V1 23 : V2 24 : V3 25 : thd In 26 : thd V1 27 : thd V2 28 : thd V3 29 : $\Sigma P-$ 30 : $\Sigma Q-$ 31 : ΣPFC	–
1312	520	2	Current alarm OUT 2 upper threshold value	–

COMMUNICATION

LIST OF PARAMETERS TO BE DISPLAYED (FUNCTION 3)

Alarm event log (continued)

Decimal address	Hexa. address	Number of words	Text	Unit
1314	522	1	Duration	s.
1315	523	1	Alarm 1 OUT 2 lower threshold: 0 : no alarm 1 : I1 2 : I2 3 : I3 4 : In 5 : U12 6 : U23 7 : U31 8 : $\Sigma P+$ 9 : $\Sigma Q+$ 10 : ΣS 11 : F 12 : ΣPFL 15 : thd I1 16 : thd I2 17 : thd I3 18 : thd U12 19 : thd U23 20 : thd U31 21 : HOUR 22 : V1 23 : V2 24 : V3 25 : thd In 26 : thd V1 27 : thd V2 28 : thd V3 29 : $\Sigma P-$ 30 : $\Sigma Q-$ 31 : ΣPFC	—
1316	524	2	Alarm 1 OUT 2 lower threshold value :	—
1318	526	1	Alarm 1 OUT 2 upper threshold: 0 : no alarm 1 : I1 2 : I2 3 : I3 4 : In 5 : U12 6 : U23 7 : U31 8 : $\Sigma P+$ 9 : $\Sigma Q+$ 10 : ΣS 11 : F 12 : ΣPFL 15 : thd I1 16 : thd I2 17 : thd I3 18 : thd U12 19 : thd U23 20 : thd U31 21 : HOUR	

LIST OF PARAMETERS TO BE DISPLAYED (FUNCTION 3)

Alarm event log (continued)

Decimal address	Hexa. address	Number of words	Text	Unit
			22 : V1 23 : V2 24 : V3 25 : thd In 26 : thd V1 27 : thd V2 28 : thd V3 29 : ΣP - 30 : ΣQ - 31 : ΣPFC	
1319	527	2	Alarm 1 OUT 2 upper threshold value	–
1321	529	1	Duration	s.
1322	52A	1	Alarm 2 OUT 2 lower threshold: 0 : no alarm 1 : I1 2 : I2 3 : I3 4 : In 5 : U12 6 : U23 7 : U31 8 : ΣP + 9 : ΣQ + 10 : ΣS 11 : F 12 : ΣPFL 15 : thd I1 16 : thd I2 17 : thd I3 18 : thd U12 19 : thd U23 20 : thd U31 21 : HOUR 22 : V1 23 : V2 24 : V3 25 : thd In 26 : thd V1 27 : thd V2 28 : thd V3 29 : ΣP - 30 : ΣQ - 31 : ΣPFC	
1323	52B	2	Alarm 2 OUT 2 lower threshold value	–
1325	52D	1	Alarm 2 OUT 2 upper threshold: 0 : no alarm 1 : I1 2 : I2 3 : I3 4 : In 5 : U12 6 : U23 7 : U31 8 : ΣP +	–

COMMUNICATION

LIST OF PARAMETERS TO BE DISPLAYED (FUNCTION 3)

Alarm event log (continued)

Decimal address	Hexa. address	Number of words	Text	Unit
			9 : $\Sigma Q+$ 10 : ΣS 11 : F 12 : ΣPFL 15 : thd I1 16 : thd I2 17 : thd I3 18 : thd U12 19 : thd U23 20 : thd U31 21 : HOUR 22 : V1 23 : V2 24 : V3 25 : thd In 26 : thd V1 27 : thd V2 28 : thd V3 29 : $\Sigma P-$ 30 : $\Sigma Q-$ 31 : ΣPFC	
1326	52E	2	Alarm 2 OUT 2 upper threshold value	—
1328	530	1	Duration	s
1329	531	1	Alarm 3 OUT 2 lower threshold: 0 : no alarm 1 : I1 2 : I2 3 : I3 4 : In 5 : U12 6 : U23 7 : U31 8 : $\Sigma P+$ 9 : $\Sigma Q+$ 10 : ΣS 11 : F 12 : ΣPFL 15 : thd I1 16 : thd I2 17 : thd I3 18 : thd U12 19 : thd U23 20 : thd U31 21 : HOUR 22 : V1 23 : V2 24 : V3 25 : thd In 26 : thd V1 27 : thd V2 28 : thd V3 29 : $\Sigma P-$ 30 : $\Sigma Q-$ 31 : ΣPFC	

LIST OF PARAMETERS TO BE DISPLAYED (FUNCTION 3)

Alarm event log (continued)

Decimal address	Hexa. address	Number of words	Text	Unit
1330	532	2	Alarm 3 OUT 2 lower threshold value	–
1332	534	1	Alarm 3 OUT 2 upper threshold: 0 : no alarm 1 : I1 2 : I2 3 : I3 4 : In 5 : U12 6 : U23 7 : U31 8 : ΣP+ 9 : ΣQ+ 10 : ΣS 11 : F 12 : ΣPFL 15 : thd I1 16 : thd I2 17 : thd I3 18 : thd U12 19 : thd U23 20 : thd U31 21 : HOUR 22 : V1 23 : V2 24 : V3 25 : thd In 26 : thd V1 27 : thd V2 28 : thd V3 29 : ΣP- 30 : ΣQ- 31 : ΣPFC	
1333	535	2	Alarm 3 OUT 2 upper threshold value	–
1335	537	1	Duration	s.
1336	538	1	Status inputs 1 and 2 plus 3, 4, 5, 6	–
1337	539	1	Current alarm OUT 3 lower threshold : 0 : no alarm 1 : I1 2 : I2 3 : I3 4 : In 5 : U12 6 : U23 7 : U31 8 : ΣP+ 9 : ΣQ+ 10 : ΣS 11 : F 12 : ΣPFL 15 : thd I1 16 : thd I2 17 : thd I3 18 : thd U12 19 : thd U23	

COMMUNICATION

LIST OF PARAMETERS TO BE DISPLAYED (FUNCTION 3)

Alarm event log (continued)

Decimal address	Hexa. address	Number of words	Text	Unit
			20 : thd U31 21 : HOUR 22 : V1 23 : V2 24 : V3 25 : thd In 26 : thd V1 27 : thd V2 28 : thd V3 29 : ΣP - 30 : ΣQ - 31 : ΣPFC	-
1338	53A	2	Current alarm OUT 3 lower threshold value	-
1340	53C	1	Current alarm OUT 3 upper threshold: 0 : no alarm 1 : I1 2 : I2 3 : I3 4 : In 5 : U12 6 : U23 7 : U31 8 : ΣP + 9 : ΣQ + 10 : ΣS 11 : F 12 : ΣPFL 15 : thd I1 16 : thd I2 17 : thd I3 18 : thd U12 19 : thd U23 20 : thd U31 21 : HOUR 22 : V1 23 : V2 24 : V3 25 : thd In 26 : thd V1 27 : thd V2 28 : thd V3 29 : ΣP - 30 : ΣQ - 31 : ΣPFC	-
1341	53D	2	Current alarm OUT 3 upper threshold value	-
1343	53F	1	Duration	s.
1344	540	1	Current alarm OUT 4 lower threshold : 0 : no alarm 1 : I1 2 : I2 3 : I3 4 : In 5 : U12 6 : U23	

LIST OF PARAMETERS TO BE DISPLAYED (FUNCTION 3)

Alarm event log (continued)

Decimal address	Hexa. address	Number of words	Text	Unit
			7 : U31 8 : $\Sigma P+$ 9 : $\Sigma Q+$ 10 : ΣS 11 : F 12 : ΣPFL 15 : thd I1 16 : thd I2 17 : thd I3 18 : thd U12 19 : thd U23 20 : thd U31 21 : HOUR 22 : V1 23 : V2 24 : V3 25 : thd In 26 : thd V1 27 : thd V2 28 : thd V3 29 : $\Sigma P-$ 30 : $\Sigma Q-$ 31 : ΣPFC	—
1345	541	2	Current alarm OUT 4 lower threshold value	—
1347	543	1	Current alarm OUT 4 upper threshold: 0 : no alarm 1 : I1 2 : I2 3 : I3 4 : In 5 : U12 6 : U23 7 : U31 8 : $\Sigma P+$ 9 : $\Sigma Q+$ 10 : ΣS 11 : F 12 : ΣPFL 15 : thd I1 16 : thd I2 17 : thd I3 18 : thd U12 19 : thd U23 20 : thd U31 21 : HOUR 22 : V1 23 : V2 24 : V3 25 : thd In 26 : thd V1 27 : thd V2 28 : thd V3 29 : $\Sigma P-$ 30 : $\Sigma Q-$ 31 : ΣPFC	—

COMMUNICATION

LIST OF PARAMETERS TO BE DISPLAYED (FUNCTION 3)

Alarm event log (continued)

Decimal address	Hexa. address	Number of words	Text	Unit
1348	544	2	Current alarm OUT 4 upper threshold value	–
1350	546	1	Duration	s.
1351	547	1	Current alarm OUT 5 lower threshold: 0 : no alarm 1 : I1 2 : I2 3 : I3 4 : In 5 : U12 6 : U23 7 : U31 8 : $\Sigma P+$ 9 : $\Sigma Q+$ 10 : ΣS 11 : F 12 : ΣPFL 15 : thd I1 16 : thd I2 17 : thd I3 18 : thd U12 19 : thd U23 20 : thd U31 21 : HOUR 22 : V1 23 : V2 24 : V3 25 : thd In 26 : thd V1 27 : thd V2 28 : thd V3 29 : $\Sigma P-$ 30 : $\Sigma Q-$ 31 : ΣPFC	–
1352	548	2	Current alarm OUT 5 lower threshold value	–
1354	54A	1	Current alarm OUT 5 upper threshold: 0 : no alarm 1 : I1 2 : I2 3 : I3 4 : In 5 : U12 6 : U23 7 : U31 8 : $\Sigma P+$ 9 : $\Sigma Q+$ 10 : ΣS 11 : F 12 : ΣPFL 15 : thd I1 16 : thd I2 17 : thd I3 18 : thd U12 19 : thd U23 20 : thd U31	

LIST OF PARAMETERS TO BE DISPLAYED (FUNCTION 3)

Alarm event log (continued)

Decimal address	Hexa. address	Number of words	Text	Unit
			21 : HOUR 22 : V1 23 : V2 24 : V3 25 : thd In 26 : thd V1 27 : thd V2 28 : thd V3 29 : ΣP - 30 : ΣQ - 31 : ΣPFC	
1355	54B	2	Current alarm OUT 5 upper threshold value	–
1357	54D	1	Duration	s.
1358	54E	1	Current alarm OUT 6 lower threshold : 0 : no alarm 1 : I1 2 : I2 3 : I3 4 : In 5 : U12 6 : U23 7 : U31 8 : ΣP + 9 : ΣQ + 10 : ΣS 11 : F 12 : ΣPFL 15 : thd I1 16 : thd I2 17 : thd I3 18 : thd U12 19 : thd U23 20 : thd U31 21 : HOUR 22 : V1 23 : V2 24 : V3 25 : thd In 26 : thd V1 27 : thd V2 28 : thd V3 29 : ΣP - 30 : ΣQ - 31 : ΣPFC	–
1359	54F	2	Current alarm OUT 6 lower threshold value	–
1361	551	1	Current alarm OUT 6 upper threshold: 0 : no alarm 1 : I1 2 : I2 3 : I3 4 : In 5 : U12 6 : U23 7 : U31 8 : ΣP + 9 : ΣQ +	–

COMMUNICATION

LIST OF PARAMETERS TO BE DISPLAYED (FUNCTION 3)

Alarm event log (continued)

Decimal address	Hexa. address	Number of words	Text	Unit
			10 : ΣS 11 : F 12 : ΣPFL 15 : thd I1 16 : thd I2 17 : thd I3 18 : thd U12 19 : thd U23 20 : thd U31 21 : HOUR 22 : V1 23 : V2 24 : V3 25 : thd In 26 : thd V1 27 : thd V2 28 : thd V3 29 : $\Sigma P-$ 30 : $\Sigma Q-$ 31 : ΣPFC	
1362	552	2	Current alarm OUT 6 upper threshold value	-

Table of current and voltage harmonics

Decimal address	Hexa. address	Number of words	Text	Unit
2304	900	1	thd I1	0.10%
2305	901	1	thd I2	0.10%
2306	902	1	thd I3	0.10%
2307	903	1	thd In	0.10%
2308	904	1	thd U12	0.10%
2309	905	1	thd U23	0.10%
2310	906	1	thd U31	0.10%
2311	907	1	thd V1	0.10%
2312	908	1	thd V2	0.10%
2313	909	1	thd V3	0.10%
2314	90A	1	Harmonic I1 row 3	0.10%
2315	90B	1	Harmonic I2 row 3	0.10%
2316	90C	1	Harmonic I3 row 3	0.10%
2317	90D	1	Harmonic IN row 3	0.10%
2318	90E	1	Harmonic I1 row 5	0.10%
2319	90F	1	Harmonic I2 row 5	0.10%
2320	910	1	Harmonic I3 row 5	0.10%
2321	911	1	Harmonic IN row 5	0.10%
2322	912	1	Harmonic I1 row 7	0.10%
2323	913	1	Harmonic I2 row 7	0.10%
2324	914	1	Harmonic I3 row 7	0.10%
2325	915	1	Harmonic IN row 7	0.10%
2326	916	1	Harmonic I1 row 9	0.10%
2327	917	1	Harmonic I2 row 9	0.10%
2328	918	1	Harmonic I3 row 9	0.10%
2329	919	1	Harmonic IN row 9	0.10%
2330	91A	1	Harmonic I1 row 11	0.10%
2331	91B	1	Harmonic I2 row 11	0.10%
2332	91C	1	Harmonic I3 row 11	0.10%

LIST OF PARAMETERS TO BE DISPLAYED (FUNCTION 3)

Table of current and voltage harmonics (continued)

Decimal address	Hexa. address	Number of words	Text	Unit
2333	91D	1	Harmonic IN row 11	0.10%
2334	91E	1	Harmonic I1 row 13	0.10%
2335	91F	1	Harmonic I2 row 13	0.10%
2336	920	1	Harmonic I3 row 13	0.10%
2337	921	1	Harmonic IN row 13	0.10%
2338	922	1	Harmonic I1 row 15	0.10%
2339	923	1	Harmonic I2 row 15	0.10%
2340	924	1	Harmonic I3 row 15	0.10%
2341	925	1	Harmonic IN row 15	0.10%
2342	926	1	Harmonic U12 row 3	0.10%
2343	927	1	Harmonic U23 row 3	0.10%
2344	928	1	Harmonic U31 row 3	0.10%
2345	929	1	Harmonic U12 row 5	0.10%
2346	92A	1	Harmonic U23 row 5	0.10%
2347	92B	1	Harmonic U31 row 5	0.10%
2348	92C	1	Harmonic U12 row 7	0.10%
2349	92D	1	Harmonic U23 row 7	0.10%
2350	92E	1	Harmonic U31 row 7	0.10%
2351	92F	1	Harmonic U12 row 9	0.10%
2352	930	1	Harmonic U23 row 9	0.10%
2353	931	1	Harmonic U31 row 9	0.10%
2354	932	1	Harmonic U12 row 11	0.10%
2355	933	1	Harmonic U23 row 11	0.10%
2356	934	1	Harmonic U31 row 11	0.10%
2357	935	1	Harmonic U12 row 13	0.10%
2358	936	1	Harmonic U23 row 13	0.10%
2359	937	1	Harmonic U31 row 13	0.10%
2360	938	1	Harmonic U12 row 15	0.10%
2361	939	1	Harmonic U23 row 15	0.10%
2362	93A	1	Harmonic U31 row 15	0.10%
2363	93B	1	Harmonic V1 row 3	0.10%
2364	93C	1	Harmonic V2 row 3	0.10%
2365	93D	1	Harmonic V3 row 3	0.10%
2366	93E	1	Harmonic V1 row 5	0.10%
2367	93F	1	Harmonic V2 row 5	0.10%
2368	940	1	Harmonic V3 row 5	0.10%
2369	941	1	Harmonic V1 row 7	0.10%
2370	942	1	Harmonic V2 row 7	0.10%
2371	943	1	Harmonic V3 row 7	0.10%
2372	944	1	Harmonic V1 row 9	0.10%
2373	945	1	Harmonic V2 row 9	0.10%
2374	946	1	Harmonic V3 row 9	0.10%
2375	947	1	Harmonic V1 row 11	0.10%
2376	948	1	Harmonic V2 row 11	0.10%
2377	949	1	Harmonic V3 row 11	0.10%
2378	94A	1	Harmonic V1 row 13	0.10%
2379	94B	1	Harmonic V2 row 13	0.10%
2380	94C	1	Harmonic V3 row 13	0.10%
2381	94D	1	Harmonic V1 row 15	0.10%
2382	94E	1	Harmonic V2 row 15	0.10%
2383	94F	1	Harmonic V3 row 15	0.10%
2384	950	1	Harmonic I1 row 17	0.10%
2385	951	1	Harmonic I2 row 17	0.10%
2386	952	1	Harmonic I3 row 17	0.10%
2387	953	1	Harmonic IN row 17	0.10%

COMMUNICATION

LIST OF PARAMETERS TO BE DISPLAYED (FUNCTION 3)

Table of current and voltage harmonics

Decimal address	Hexa. address	Number of words	Text	Unit
2388	954	1	Harmonic I1 row 19	0.10%
2389	955	1	Harmonic I2 row 19	0.10%
2390	956	1	Harmonic I3 row 19	0.10%
2391	957	1	Harmonic IN row 19	0.10%
2392	958	1	Harmonic I1 row 21	0.10%
2393	959	1	Harmonic I2 row 21	0.10%
2394	95A	1	Harmonic I3 row 21	0.10%
2395	95B	1	Harmonic IN row 21	0.10%
2396	95C	1	Harmonic I1 row 23	0.10%
2397	95D	1	Harmonic I2 row 23	0.10%
2398	95E	1	Harmonic I3 row 23	0.10%
2399	95F	1	Harmonic IN row 23	0.10%
2400	960	1	Harmonic I1 row 25	0.10%
2401	961	1	Harmonic I2 row 25	0.10%
2402	962	1	Harmonic I3 row 25	0.10%
2403	963	1	Harmonic IN row 25	0.10%
2404	964	1	Harmonic U12 row 17	0.10%
2405	965	1	Harmonic U23 row 17	0.10%
2406	966	1	Harmonic U31 row 17	0.10%
2407	967	1	Harmonic U12 row 19	0.10%
2408	968	1	Harmonic U23 row 19	0.10%
2409	969	1	Harmonic U31 row 19	0.10%
2410	96A	1	Harmonic U12 row 21	0.10%
2411	96B	1	Harmonic U23 row 21	0.10%
2412	96C	1	Harmonic U31 row 21	0.10%
2413	96D	1	Harmonic U12 row 23	0.10%
2414	96E	1	Harmonic U23 row 23	0.10%
2415	96F	1	Harmonic U31 row 23	0.10%
2416	970	1	Harmonic U12 row 25	0.10%
2417	971	1	Harmonic U23 row 25	0.10%
2418	972	1	Harmonic U31 row 25	0.10%
2419	973	1	Harmonic V1 row 17	0.10%
2420	974	1	Harmonic V2 row 17	0.10%
2421	975	1	Harmonic V3 row 17	0.10%
2422	976	1	Harmonic V1 row 19	0.10%
2423	977	1	Harmonic V2 row 19	0.10%
2424	978	1	Harmonic V3 row 19	0.10%
2425	979	1	Harmonic V1 row 21	0.10%
2426	97A	1	Harmonic V2 row 21	0.10%
2427	97B	1	Harmonic V3 row 21	0.10%
2428	97C	1	Harmonic V1 row 23	0.10%
2429	97D	1	Harmonic V2 row 23	0.10%
2430	97E	1	Harmonic V3 row 23	0.10%
2431	97F	1	Harmonic V1 row 25	0.10%
2432	980	1	Harmonic V2 row 25	0.10%

Size of this zone : 130 words (decimal) or 82 (hexadecimal)

LIST OF PARAMETERS TO BE DISPLAYED (FUNCTION 3)

Option recognition table

Decimal address	Hexa. address	Number of words	Text	Unit
257	101	1	Product code	–
258	102	1	Slot option 1 0xFF : no option 0x00 : communication option 0x01 : metering option 0x03 : metering and harmonics option 0x20 : inputs/outputs option 0x30 : analog outputs option 0x40 : memory option 0x50 : Profibus option 0xF0 : presence of IN measure	–
259	103	1	Slot option 2	–
260	104	1	Slot option 3	–
261	105	1	Slot option 4	–
262	106	1	Version number	–
263	107	2	Serial number	–

Size of this zone : 8 words (decimal) or 8 (hexadecimal)

COMMUNICATION

LIST OF PARAMETERS TO BE DISPLAYED OR PROGRAMMED (FUNCTION 3, 6 OR 16)

Decimal address	Hexa. address	Number of words	Text	Unit
512	200	1	Network type: 0 : 1BL 1 : 2BL 2 : 3BL 3 : 3NBL 4 : 4BL 5 : 4NBL	–
513	201	1	CT secondary : 1 : 1 A 5 : 5 A	A
514	202	1	CT primary	A
515	203	1	Voltage input on PT: 0 : No 1: Yes	–
516	204	2	PT primary	V
518	206	1	PT secondary: 60 : 60 V 100 : 100 V 110 : 110 V 115 : 115 V 120 : 120 V 173 : 173 V 190 : 190 V	V
519	207	1	Synchronisation of I AVG/MAX: Time in seconds, possible values 2 : 2 seconds 10 : 10 seconds 300 : 5 minutes (5x60s) 480 : 8 minutes (8x60s) 600 : 10 minutes (10x60s) 900 : 15 minutes (15x60s) 1200 : 20 minutes (20x60s) 1800 : 30 minutes (30x60s) 3600 : 60 minutes (60x60s)	s
520	208	1	Synchronisation of P/Q/S AVG/MAX: Time in seconds, possible values 10 : 10 seconds 300 : 5 minutes (5x60s) 480 : 8 minutes (8x60s) 600 : 10 minutes (10x60s) 900 : 15 minutes (15x60s) 1200 : 20 minutes (20x60s) 1800 : 30 minutes (30x60s) 3600 : 60 minutes (60x60s)	s
521	209	1	OUT 1 allocation of the pulse output: 0 : kWh + 1 : kvarh + 2 : kVAh 3 : kWh - 4 : kvarh -	–
522	20A	1	OUT1 impulse value: 0 : 0.1 kWh/kvarh/kVAh 1 : 1 kWh/kvarh/kVAh 2 : 10 kWh/kvarh/kVAh	–

LIST OF PARAMETERS TO BE DISPLAYED OR PROGRAMMED (FUNCTION 3, 6 OR 16)

Decimal address	Hexa. address	Number of words	Text	Unit
			3 : 100 kWh/kvarh/kVAh 4 : 1000 kWh/kvarh/kVAh 5 : 10000 kWh/kvarh/kVAh	
523	20B	1	OUT 1 impulse duration: 1 : 100 ms 2 : 200 ms 3 : 300 ms 4 : 400 ms 5 : 500 ms 6 : 600 ms 7 : 700 ms 8 : 800 ms 9 : 900 ms	–
524	20C	1	OUT 2 allocation of the pulse output: 0 : kWh + 1 : kvarh + 2 : kVAh 3 : kWh - 4 : kvarh -	–
525	20D	1	OUT 2 impulse value: 0 : 0.1 kWh/kvarh/kVAh 1 : 1 kWh/kvarh/kVAh 2 : 10 kWh/kvarh/kVAh 3 : 100 kWh/kvarh/kVAh 4 : 1000 kWh/kvarh/kVAh 5 : 10000 kWh/kvarh/kVAh	–
526	20E	1	OUT 2 impulse duration : 1 : 100 ms 2 : 200 ms 3 : 300 ms 4 : 400 ms 5 : 500 ms 6 : 600 ms 7 : 700 ms 8 : 800 ms 9 : 900 ms	–
527	20F	1	Type of analog output OUT 1: 0 : 0/20 mA 1 : 4/20 mA 2 : 30 V	–
528	210	1	Output allocation analog OUT 1: 0: I1 1 : I2 2 : I3 3 : In 4 : U12 5 : U23 6 : U31 7 : ΣP 8 : ΣQ 9 : ΣS 10 : ΣPFL 11 : V1 12 : V2	–

COMMUNICATION

LIST OF PARAMETERS TO BE DISPLAYED OR PROGRAMMED (FUNCTION 3, 6 OR 16)

Decimal address	Hexa. address	Number of words	Text	Unit
			13 : V3 14 : F 15 : Σ PFC	
529	211	1	Value at 0 or 4 mA from analog output OUT 1	—
530	212	1	Unit at 0 or 4 mA from analog output OUT 1: 0 : / 1 : k 2 : M	—
531	213	1	Value at 20 mA from analog output OUT 1	—
532	214	1	Unit at 20 mA from analog output OUT 1: 0 : / 1 : k 2 : M	—
533	215	1	Type of analog output OUT 2 : 0 : 0/20 mA 1 : 4/20 mA 2 : 30 V	—
534	216	1	Output allocation analog OUT 2: 0 : I1 1 : I2 2 : I3 3 : In 4 : U12 5 : U23 6 : U31 7 : Σ P 8 : Σ Q 9 : Σ S 10 : Σ PFL 11 : V1 12 : V2 13 : V3 14 : F 15 : Σ PFC	—
535	217	1	Value at 0 or 4 mA from analog output OUT 2	—
536	218	1	Unit at 0 or 4 mA from analog output OUT 2 : 0 : / 1 : k 2 : M	—
537	219	1	Value at 20 mA from analog output OUT 2:	—
538	21A	1	Unit at 20 mA from analog output OUT 2: 0 : / 1 : k 2 : M	—
539	21B	1	Type of analog output OUT 3: 0 : 0/20 mA 1 : 4/20 mA 2 : 30 V	—
540	21C	1	Output allocation analog OUT 3: 0 : I1 1 : I2 2 : I3 3 : In 4 : U12 5 : U23 6 : U31	—

LIST OF PARAMETERS TO BE DISPLAYED OR PROGRAMMED (FUNCTION 3, 6 OR 16)

Decimal address	Hexa. address	Number of words	Text	Unit
			7 : ΣP 8 : ΣQ 9 : ΣS 10 : ΣPFL 11 : V1 12 : V2 13 : V3 14 : F 15 : ΣPFC	
541	21D	1	Value at 0 or 4 mA from analog output OUT 3	–
542	21E	1	Unit at 0 or 4 mA from analog output OUT 3: 0 : / 1 : k 2 : M	–
543	21F	1	Value at 20 mA from analog output OUT 3	–
544	220	1	Unit at 20 mA from analog output OUT 3: 0 : / 1 : k 2 : M	–
545	221	1	Type of analog output OUT 4: 0 : 0/20 mA 1 : 4/20 mA 2 : 30 V	–
546	222	1	Output allocation analog OUT 4: 0 : I1 1 : I2 2 : I3 3 : In 4 : U12 5 : U23 6 : U31 7 : ΣP 8 : ΣQ 9 : ΣS 10 : ΣPFL 11 : V1 12 : V2 13 : V3 14 : F 15 : ΣPFC	–
547	223	1	Value at 0 or 4 mA from analog output OUT 4	–
548	224	1	Unit at 0 or 4 mA from analog output OUT 4: 0 : / 1 : k 2 : M	–
549	225	1	Value at 20 mA from analog output OUT 4	–
550	226	1	Unit at 20 mA from analog output OUT 4: 0 : / 1 : k 2 : M	–
551	227	1	Allocation of OUT 1 relay: 0 : Cde 1 : I 2 : U 3 : $\Sigma P+$ 4 : $\Sigma Q+$ 5 : ΣS	–

COMMUNICATION

LIST OF PARAMETERS TO BE DISPLAYED OR PROGRAMMED (FUNCTION 3, 6 OR 16)

Decimal address	Hexa. address	Number of words	Text	Unit
			6 : F 7 : Σ PFL 8 : thd 3I 9 : thd 3U 10 : IN 11 : HOUR 12 : V 13 : thd In 14 : thd 3V 15 : Σ P- 16 : Σ Q- 17 : Σ PFC 18 : Cd-t	
552	228	1	Lower threshold OUT 1	—
553	229	1	Unit lower threshold OUT 1: 0 : / 1 : k 2 : M	—
554	22A	1	Threshold value OUT 1	—
555	22B	1	Unit threshold value OUT : 0 : / 1 : k 2 : M	—
556	22C	1	Hysteresis 0 to 99 OUT 1	%
557	22D	1	Specified time OUT 1	s.
558	22E	1	Relay status OUT 1: 0 : Open 1 : Closed	—
559	22F	1	Allocation of OUT 2 relay : 0 : Cde 1 : I 2 : U 3 : Σ P+ 4 : Σ Q+ 5 : Σ S 6 : F 7 : Σ PFL 8 : thd 3I 9 : thd 3U 10 : IN 11 : HOUR 12 : V 13 : thd In 14 : thd 3V 15 : Σ P- 16 : Σ Q- 17 : Σ PFC 18 : Cd-t	—
560	230	1	Lower threshold OUT 2	—
561	231	1	Unit lower threshold OUT 2: 0 : / 1 : k 2 : M	—
562	232	1	Threshold value OUT 2	—
563	233	1	Unit upper threshold OUT 2: 0 : / 1 : k 2 : M	—

LIST OF PARAMETERS TO BE DISPLAYED OR PROGRAMMED (FUNCTION 3, 6 OR 16)

Decimal address	Hexa. address	Number of words	Text	Unit
564	234	1	Hysteresis 0 to 99 OUT 2	%
565	235	1	Specified time OUT 2	s.
566	236	1	Relay status OUT 2 : 0 : Open 1 : Closed	–
567	237	1	Relay status OUT 3 : 0 : Open 1 : Closed	–
568	238	1	Relay status OUT 4 : 0 : Open 1 : Closed	–
569	239	1	Relay status OUT 5 : 0 : Open 1 : Closed	–
570	23A	1	Relay status OUT 6 : 0 : Open 1 : Closed	–
571	23B	1	CT secondary neutral : 1: 1 A 5: 5 A	A
572	23C	1	CT primary neutral	A
573	23D	1	Synchronisation of U AVG/MAX : 10 : 10 seconds 300 : 5 minutes (5x60s) 480 : 8 minutes (8x60s) 600 : 10 minutes (10x60s) 900 : 15 minutes (15x60s) 1200 : 20 minutes (20x60s) 1800 : 30 minutes (30x60s) 3600 : 60 minutes (60x60s)	s.
574	23E	1	Synchronisation of F AVG/MAX : 10 : 10 seconds 300 : 5 minutes (5x60s) 480 : 8 minutes (8x60s) 600 : 10 minutes (10x60s) 900 : 15 minutes (15x60s) 1200 : 20 minutes (20x60s) 1800 : 30 minutes (30x60s) 3600 : 60 minutes (60x60s)	s.
575	23F	1	Mean power memory storage P+ : 0 : no 1 : yes	
576	240	1	Mean power memory storage P- : 0 : no 1 : yes	
577	241	1	Mean power memory storage Q+ : 0 : no 1 : yes	
578	242	1	Mean power memory storage Q- : 0 : no 1 : yes	
579	243	1	Mean power synchronisation signal : 0 : internal 1 : external	
580	244	1	Synchronisation period for P+, P-, Q+ et Q- : 300 : 5 minutes (5x60s) 480 : 8 minutes (8x60s) 600 : 10 minutes (10x60s) 900 : 15 minutes (15x60s) 1200 : 20 minutes (20x60s) 1800 : 30 minutes (30x60s)	s.

COMMUNICATION

LIST OF PARAMETERS TO BE DISPLAYED OR PROGRAMMED (FUNCTION 3, 6 OR 16)

Decimal address	Hexa. address	Number of words	Text	Unit
581	245	1	Allocation of OUT 3 relay: 0 : Cde 1 : I 2 : U 3 : $\Sigma P+$ 4 : $\Sigma Q+$ 5 : ΣS 6 : F 7 : ΣPFL 8 : thd 3I 9 : thd 3U 10 : IN 11 : HOUR 12 : V 13 : thd In 14 : thd 3V 15 : $\Sigma P-$ 16 : $\Sigma Q-$ 17 : ΣPFC 18 : Cd-t	
582	246	1	Lower threshold OUT 3	
583	247	1	Unit lower threshold OUT 3 : 0 : / 1 : k 2 : M	
584	248	1	Upper threshold OUT 3	
585	249	1	Unit upper threshold OUT 3 : 0 : / 1 : k 2 : M	
586	24A	1	Hysteresis 0 to 99 OUT 3	%
587	24B	1	Specified time OUT 3	s.
588	24C	1	Relay status OUT 3 : 0 : Open 1 : Closed	
589	24D	1	Allocation of OUT 4 relay: 0 : Cde 1 : I 2 : U 3 : $\Sigma P+$ 4 : $\Sigma Q+$ 5 : ΣS 6 : F 7 : ΣPFL 8 : thd 3I 9 : thd 3U 10 : IN 11 : HOUR 12 : V 13 : thd In 14 : thd 3V 15 : $\Sigma P-$ 16 : $\Sigma Q-$ 17 : ΣPFC 18 : Cd-t	

LIST OF PARAMETERS TO BE DISPLAYED OR PROGRAMMED (FUNCTION 3, 6 OR 16)

Decimal address	Hexa. address	Number of words	Text	Unit
590	24E	1	Lower threshold OUT 4	
591	24F	1	Unit lower threshold OUT 4 : 0 : / 1 : k 2 : M	
592	250	1	Upper threshold OUT 4	
593	251	1	Unit upper threshold OUT 4 : 0 : / 1 : k 2 : M	
594	252	1	Hysteresis 0 to 99 OUT 4	%
595	253	1	Specified time OUT 4	s.
596	254	1	Relay status OUT 4 : 0 : Open 1 : Closed	
597	255	1	Allocation of OUT 5 relay: 0 : Cde 1 : I 2 : U 3 : $\Sigma P+$ 4 : $\Sigma Q+$ 5 : ΣS 6 : F 7 : ΣPFL 8 : thd 3I 9 : thd 3U 10 : IN 11 : HOUR 12 : V 13 : thd In 14 : thd 3V 15 : $\Sigma P-$ 16 : $\Sigma Q-$ 17 : ΣPFC 18 : Cd-t	
598	256	1	Lower threshold OUT 5	
599	257	1	Unit lower threshold OUT 5 : 0 : / 1 : k 2 : M	
600	258	1	Upper threshold OUT 5	
601	259	1	Unit upper threshold OUT 5 : 0 : / 1 : k 2 : M	
602	25A	1	Hysteresis 0 to 99 OUT 5	%
603	25B	1	Specified time OUT 5	s.
604	25C	1	Relay status OUT 5 : 0 : Open 1 : Closed	
605	25D	1	Allocation of OUT 6 relay: 0 : Cde 1 : I 2 : U	

COMMUNICATION

LIST OF PARAMETERS TO BE DISPLAYED OR PROGRAMMED (FUNCTION 3, 6 OR 16)

Decimal address	Hexa. address	Number of words	Text	Unit
			3 : $\Sigma P+$ 4 : $\Sigma Q+$ 5 : ΣS 6 : F 7 : ΣPFL 8 : thd 3I 9 : thd 3U 10 : IN 11 : HOUR 12 : V 13 : thd In 14 : thd 3V 15 : $\Sigma P-$ 16 : $\Sigma Q-$ 17 : ΣPFC 18 : Cd-t	
606	25E	1	Lower threshold OUT 6	
607	25F	1	Unit lower threshold OUT 6 : 0 : / 1 : k 2 : M	
608	260	1	Upper threshold OUT 6	
609	261	1	Unit upper threshold OUT 6 : 0 : / 1 : k 2 : M	
610	262	1	Hysteresis 0 to 99 OUT 6	%
611	263	1	Specified time OUT 6	s.
612	264	1	Relay status OUT 6 : 0 : Open 1 : Closed	
613	265	1	Voltage dips detection threshold (SAG)	%
614	266	1	Voltage dip detection threshold hysteresis (SAG)	%
615	267	1	Voltage surge detection threshold hysteresis (SWELL)	%
616	268	1	Voltage surge detection threshold hysteresis (SWELL)	%

Size of this zone: 105 words (decimals) or 69 (hexadecimals)

Example:

Configuration of a 4-wired unbalanced network
(4 NBL) for R-DPA96 number 5.

Slave	Function	High-order address	Low-order address	High-order word N°	Low-order word N°	CRC 16
05	06	02	00	00	05	49F5

R-DPA96 A/AN reply: Identical to message sent.

RESET TO ZERO: ENERGY METERS AND MAX. VALUES (FUNCTION 6)

Decimal address	Hexa. address	Number of words	Text	Unit
1024	400	1	RAZ: Max3I : 0 x 0001 MaxP+ : 0 x 0002 MaxP- : 0 x 0004 MaxQ+ : 0 x 0008 MaxQ- : 0 x 0010 MaxS : 0 x 0020 Hour meter : 0 x 0040 kWh+ : 0 x 0080 kvarh+ : 0 x 0100 kVAh : 0 x 0200 kWh- : 0 x 0400 kvarh- : 0 x 0800 All parameters : 0 x 1000 MaxU : 0 x 2000 MaxV : 0 x 4000 MaxF : 0 x 8000	
1025	401	1	R.A.Z. : E1 : 0 x 0001 E2 : 0 x 0002 E3 : 0 x 0004 E4 : 0 x 0008 E5 : 0 x 0010 E6 : 0 x 0020 Min/Max I : 0 x 0040 Min/Max In : 0 x 0080 Min/Max U : 0 x 0100 Min/Max F : 0 x 0200 Min/Max PF : 0 x 0400 Min/Max P : 0 x 0800 Min/Max Q : 0 x 1000 Min/Max thd I : 0 x 2000 Min/Max thd In : 0 x 4000 Min/Max thd U : 0 x 8000	
1026	402	1	RAZ: Min/Max thd V : 0 x 0001 Min/Max V : 0 x 0002 Min/Max S : 0 x 0004 10 alarms event log : 0 x 0008 10 voltage dips event log : 0 x 0010 10 surges event log : 0 x 0020 10 cut-offs event log : 0 x 0040 Averaged out frequencies : 0 x 0080 Averaged out voltage values : 0 x 0100 Averaged out power values : 0 x 0200	

COMMUNICATION

RESET TO ZERO: ENERGY METERS AND MAX. VALUES (FUNCTION 6)

NB:

To reset several parameters to zero, add the corresponding figure indicated in the “text” column.

Example: reset Max P+ and kvarh + to zero:

2 + 100 = 102 (Hex)

Example:

To reset all values for R-DPA96 number 5 to zero, the following frame should be sent:

Slave	Function	High-order address	Low-order address	High-order word N°	Low-order word N°	CRC 16
05	06	04	00	10	00	84BE

R-DPA96 A/AN reply: identical to the message sent.

SAVED COMMAND (RESET)

The following command should be done to save programming parameters changes for R-DPA96 number 5.

Slave	Function	High-order address	Low-order address	Values	CRC 16
05	06	06	00	0000	88C6

NB:

R-DPA96 A/AN will not reply to this command.

PULSE METERS VALUES

Input meters

Decimal address	Hexa. address	Number of words	Text	Unit
2560	A00	2	Input E1, option ES 1	
2562	A02	2	Input E2, option ES 1	
2564	A04	2	Input E3, option ES 2	
2566	A06	2	inputE4, option ES 2	
2568	A08	2	Input E5, option ES 3	
2570	A0A	2	Input E6, option ES 3	

Size of this zone: 12 words (decimals) or C (hexadecimals)

DATE AND HOUR SETTINGS (FUNCTION 3, 6 OR 16)

Input meters

Decimal address	Hexa. address	Number of words	Text	Unit
3072	C00	1	Day	
3073	C01	1	Month	
3074	C02	1	Year	
3075	C03	1	Hour	
3076	C04	1	Minute	
3077	C05	1	Second	

Zone size: 6 words (decimal) or 6 (hexadecimal).

LAST 10 ALARMS EVENT LOG (FUNCTION 3)

Alarm n-1

Decimal address	Hexa. address	Number of words	Text	Unit
3088	C10	1	Alarm output number (1 to 6)	
3089	C11	1	Lower threshold: 0 : no alarm 1 : I1 2 : I2 3 : I3 4 : In 5 : U12 6 : U23 7 : U31 8 : ΣP+ 9 : ΣQ+ 10 : ΣS 11 : F 12 : ΣPFL 15 : thd I1 16 : thd I2 17 : thd I3 18 : thd U12 19 : thd U23 20 : thd U31 21 : HOUR 22 : V1 23 : V2 24 : V3 25 : thd In 26 : thd V1 27 : thd V2 28 : thd V3 29 : ΣP- 30 : ΣQ- 31 : ΣPFC	
3090	C12	2	Lower threshold value	
3092	C14	1	Lower threshold: 0 : no alarm 1 : I1 2 : I2 3 : I3 4 : In 5 : U12	

COMMUNICATION

LAST 10 ALARMS EVENT LOG (FUNCTION 3)

Alarm n-1

Decimal address	Hexa. address	Number of words	Text	Unit
			6 : U23 7 : U31 8 : $\Sigma P+$ 9 : $\Sigma Q+$ 10 : ΣS 11 : F 12 : ΣPFL 15 : thd I1 16 : thd I2 17 : thd I3 18 : thd U12 19 : thd U23 20 : thd U31 21 : HOUR 22 : V1 23 : V2 24 : V3 25 : thd In 26 : thd V1 27 : thd V2 28 : thd V3 29 : $\Sigma P-$ 30 : $\Sigma Q-$ 31 : ΣPFC	
3093	C15	2	Upper threshold value	
3095	C17	1	Duration	s
3096	C18	1	Day	
3097	C19	1	Month	
3098	C1A	1	Year	
3099	C1B	1	Hour	
3100	C1C	1	Minute	
3101	C1D	1	Second	

Alarm n-2

Decimal address	Hexa. address	Number of words	Text	Unit
3102	C1E	1	Output number (1 to 6)	
3103	C1F	1	Lower threshold : 0 : no alarm 1 : I1 2 : I2 3 : I3 4 : In 5 : U12 6 : U23 7 : U31 8 : $\Sigma P+$ 9 : $\Sigma Q+$ 10 : ΣS 11 : F 12 : ΣPFL 15 : thd I1 16 : thd I2 17 : thd I3	

LAST 10 ALARMS EVENT LOG (FUNCTION 3)

Alarm n-2

Decimal address	Hexa. address	Number of words	Text	Unit
			18 : thd U12 19 : thd U23 20 : thd U31 21 : HOUR 22 : V1 23 : V2 24 : V3 25 : thd In 26 : thd V1 27 : thd V2 28 : thd V3 29 : ΣP - 30 : ΣQ - 31 : ΣPFC	
3104	C20	2	Lower threshold value	
3106	C22	1	Lower threshold : 0 : no alarm 1 : I1 2 : I2 3 : I3 4 : In 5 : U12 6 : U23 7 : U31 8 : ΣP + 9 : ΣQ + 10 : ΣS 11 : F 12 : ΣPFL 15 : thd I1 16 : thd I2 17 : thd I3 18 : thd U12 19 : thd U23 20 : thd U31 21 : HOUR 22 : V1 23 : V2 24 : V3 25 : thd In 26 : thd V1 27 : thd V2 28 : thd V3 29 : ΣP - 30 : ΣQ - 31 : ΣPFC	
3107	C23	2	Upper threshold value	
3109	C25	1	Duration	s
3110	C26	1	Day	
3111	C27	1	Month	
3112	C28	1	Year	
3113	C29	1	Hour	
3114	C2A	1	Minute	
3115	C2B	1	Second	

COMMUNICATION

LAST 10 ALARMS EVENT LOG (FUNCTION 3)

Alarm n-3

Decimal address	Hexa. address	Number of words	Text	Unit
3116	C2C	1	Output number (1 to 6)	
3117	C2D	1	Lower threshold : 0 : no alarm 1 : I1 2 : I2 3 : I3 4 : In 5 : U12 6 : U23 7 : U31 8 : $\Sigma P+$ 9 : $\Sigma Q+$ 10 : ΣS 11 : F 12 : ΣPFL 15 : thd I1 16 : thd I2 17 : thd I3 18 : thd U12 19 : thd U23 20 : thd U31 21 : HOUR 22 : V1 23 : V2 24 : V3 25 : thd In 26 : thd V1 27 : thd V2 28 : thd V3 29 : $\Sigma P-$ 30 : $\Sigma Q-$ 31 : ΣPFC	
3118	C2E	2	Lower threshold value	
3120	C30	1	Lower threshold : 0 : no alarm 1 : I1 2 : I2 3 : I3 4 : In 5 : U12 6 : U23 7 : U31 8 : $\Sigma P+$ 9 : $\Sigma Q+$ 10 : ΣS 11 : F 12 : ΣPFL 15 : thd I1 16 : thd I2 17 : thd I3 18 : thd U12 19 : thd U23 20 : thd U31 21 : HOUR	

LAST 10 ALARMS EVENT LOG (FUNCTION 3)

Alarm n-3

Decimal address	Hexa. address	Number of words	Text	Unit
			22 : V1 23 : V2 24 : V3 25 : thd In 26 : thd V1 27 : thd V2 28 : thd V3 29 : Σ P- 30 : Σ Q- 31 : Σ PFC	
3121	C31	2	Upper threshold value	
3123	C33	1	Duration	s
3124	C34	1	Day	
3125	C35	1	Month	
3126	C36	1	Year	
3127	C37	1	Hour	
3128	C38	1	Minute	
3129	C39	1	Second	

Alarm n-4

Decimal address	Hexa. address	Number of words	Text	Unit
3130	C3A	1	Output number (1 to 6)	
3131	C3B	1	Lower threshold : 0 : no alarm 1 : I1 2 : I2 3 : I3 4 : In 5 : U12 6 : U23 7 : U31 8 : Σ P+ 9 : Σ Q+ 10 : Σ S 11 : F 12 : Σ PFL 15 : thd I1 16 : thd I2 17 : thd I3 18 : thd U12 19 : thd U23 20 : thd U31 21 : HOUR 22 : V1 23 : V2 24 : V3 25 : thd In 26 : thd V1 27 : thd V2 28 : thd V3 29 : Σ P- 30 : Σ Q- 31 : Σ PFC	

COMMUNICATION

LAST 10 ALARMS EVENT LOG (FUNCTION 3)

Alarm n-4

Decimal address	Hexa. address	Number of words	Text	Unit
3132	C3C	2	Lower threshold value	
3134	C3E	1	Lower threshold : 0 : no alarm 1 : I1 2 : I2 3 : I3 4 : In 5 : U12 6 : U23 7 : U31 8 : $\Sigma P+$ 9 : $\Sigma Q+$ 10 : ΣS 11 : F 12 : ΣPFL 15 : thd I1 16 : thd I2 17 : thd I3 18 : thd U12 19 : thd U23 20 : thd U31 21 : HOUR 22 : V1 23 : V2 24 : V3 25 : thd In 26 : thd V1 27 : thd V2 28 : thd V3 29 : $\Sigma P-$ 30 : $\Sigma Q-$ 31 : ΣPFC	
3135	C3F	2	Upper threshold value	
3137	C41	1	Duration	s
3138	C42	1	Day	
3139	C43	1	Month	
3140	C44	1	Year	
3141	C45	1	Hour	
3142	C46	1	Minute	
3143	C47	1	Second	

Alarm n-5

Decimal address	Hexa. address	Number of words	Text	Unit
3144	C48	1	Output number (1 to 6)	
3145	C49	1	Lower threshold : 0 : no alarm 1 : I1 2 : I2 3 : I3 4 : In 5 : U12 6 : U23 7 : U31	

LAST 10 ALARMS EVENT LOG (FUNCTION 3)

Alarm n-5

Decimal address	Hexa. address	Number of words	Text	Unit
			8 : $\Sigma P+$ 9 : $\Sigma Q+$ 10 : ΣS 11 : F 12 : ΣPFL 15 : thd I1 16 : thd I2 17 : thd I3 18 : thd U12 19 : thd U23 20 : thd U31 21 : HOUR 22 : V1 23 : V2 24 : V3 25 : thd In 26 : thd V1 27 : thd V2 28 : thd V3 29 : $\Sigma P-$ 30 : $\Sigma Q-$ 31 : ΣPFC	
3146	C4A	2	Lower threshold value	
3148	C4C	1	Lower threshold : 0 : no alarm 1 : I1 2 : I2 3 : I3 4 : In 5 : U12 6 : U23 7 : U31 8 : $\Sigma P+$ 9 : $\Sigma Q+$ 10 : ΣS 11 : F 12 : ΣPFL 15 : thd I1 16 : thd I2 17 : thd I3 18 : thd U12 19 : thd U23 20 : thd U31 21 : HOUR 22 : V1 23 : V2 24 : V3 25 : thd In 26 : thd V1 27 : thd V2 28 : thd V3 29 : $\Sigma P-$ 30 : $\Sigma Q-$ 31 : ΣPFC	

COMMUNICATION

LAST 10 ALARMS EVENT LOG (FUNCTION 3)

Alarm n-5

Decimal address	Hexa. address	Number of words	Text	Unit
3149	C4D	2	Upper threshold value	
3151	C4F	1	Duration	s
3152	C50	1	Day	s
3153	C51	1	Month	
3154	C52	1	Year	
3155	C53	1	Hour	
3156	C54	1	Minute	
3157	C55	1	Second	

Alarm n-6

Decimal address	Hexa. address	Number of words	Text	Unit
3158	C56	1	Output number (1 to 6)	
3159	C57	1	Lower threshold : 0 : no alarm 1 : I1 2 : I2 3 : I3 4 : In 5 : U12 6 : U23 7 : U31 8 : ΣP+ 9 : ΣQ+ 10 : ΣS 11 : F 12 : ΣPFL 15 : thd I1 16 : thd I2 17 : thd I3 18 : thd U12 19 : thd U23 20 : thd U31 21 : HOUR 22 : V1 23 : V2 24 : V3 25 : thd In 26 : thd V1 27 : thd V2 28 : thd V3 29 : ΣP- 30 : ΣQ- 31 : ΣPFC	
3160	C58	2	Lower threshold value	
3162	C5A	1	Lower threshold : 0 : no alarm 1 : I1 2 : I2 3 : I3 4 : In 5 : U12	

LAST 10 ALARMS EVENT LOG (FUNCTION 3)

Alarme n-6

Decimal address	Hexa. address	Number of words	Text	Unit
			6 : U23 7 : U31 8 : $\Sigma P+$ 9 : $\Sigma Q+$ 10 : ΣS 11 : F 12 : ΣPFL 15 : thd I1 16 : thd I2 17 : thd I3 18 : thd U12 19 : thd U23 20 : thd U31 21 : HOUR 22 : V1 23 : V2 24 : V3 25 : thd In 26 : thd V1 27 : thd V2 28 : thd V3 29 : $\Sigma P-$ 30 : $\Sigma Q-$ 31 : ΣPFC	
3163	C5B	2	Upper threshold value	
3165	C5D	1	Duration	s
3166	C5E	1	Day	
3167	C5F	1	Month	
3168	C60	1	Year	
3169	C61	1	Hour	
3170	C62	1	Minute	
3171	C63	1	Second	

Alarm n-7

Decimal address	Hexa. address	Number of words	Text	Unit
3172	C64	1	Output number (1 to 6)	
3173	C65	1	Lower threshold : 0 : no alarm 1 : I1 2 : I2 3 : I3 4 : In 5 : U12 6 : U23 7 : U31 8 : $\Sigma P+$ 9 : $\Sigma Q+$ 10 : ΣS 11 : F 12 : ΣPFL 15 : thd I1 16 : thd I2	

COMMUNICATION

LAST 10 ALARMS EVENT LOG (FUNCTION 3)

Alarm n-7

Decimal address	Hexa. address	Number of words	Text	Unit
			17 : thd I3 18 : thd U12 19 : thd U23 20 : thd U31 21 : HOUR 22 : V1 23 : V2 24 : V3 25 : thd In 26 : thd V1 27 : thd V2 28 : thd V3 29 : ΣP - 30 : ΣQ - 31 : ΣPFC	
3174	C66	2	Lower threshold value	
3176	C68	1	Lower threshold : 0 : no alarm 1 : I1 2 : I2 3 : I3 4 : In 5 : U12 6 : U23 7 : U31 8 : ΣP + 9 : ΣQ + 10 : ΣS 11 : F 12 : ΣPFL 15 : thd I1 16 : thd I2 17 : thd I3 18 : thd U12 19 : thd U23 20 : thd U31 21 : HOUR 22 : V1 23 : V2 24 : V3 25 : thd In 26 : thd V1 27 : thd V2 28 : thd V3 29 : ΣP - 30 : ΣQ - 31 : ΣPFC	
3177	C69	2	Upper threshold value	
3179	C6B	1	Duration	s
3180	C6C	1	Day	
3181	C6D	1	Month	
3182	C6E	1	Year	
3183	C6F	1	Hour	
3184	C70	1	Minute	

LAST 10 ALARMS EVENT LOG (FUNCTION 3)

Alarm n-8

Decimal address	Hexa. address	Number of words	Text	Unit
3186	C72	1	Output number (1 to 6)	
3187	C73	1	Lower threshold : 0 : no alarm 1 : I1 2 : I2 3 : I3 4 : In 5 : U12 6 : U23 7 : U31 8 : ΣP+ 9 : ΣQ+ 10 : ΣS 11 : F 12 : ΣPFL 15 : thd I1 16 : thd I2 17 : thd I3 18 : thd U12 19 : thd U23 20 : thd U31 21 : HOUR 22 : V1 23 : V2 24 : V3 25 : thd In 26 : thd V1 27 : thd V2 28 : thd V3 29 : ΣP- 30 : ΣQ- 31 : ΣPFC	
3188	C74	2	Lower threshold value	
3190	C76	1	Lower threshold : 0 : no alarm 1 : I1 2 : I2 3 : I3 4 : In 5 : U12 6 : U23 7 : U31 8 : ΣP+ 9 : ΣQ+ 10 : ΣS 11 : F 12 : ΣPFL 15 : thd I1 16 : thd I2 17 : thd I3 18 : thd U12 19 : thd U23 20 : thd U31 21 : HOUR	

COMMUNICATION

LAST 10 ALARMS EVENT LOG (FUNCTION 3)

Alarm n-8

Decimal address	Hexa. address	Number of words	Text	Unit
			22 : V1 23 : V2 24 : V3 25 : thd In 26 : thd V1 27 : thd V2 28 : thd V3 29 : Σ P- 30 : Σ Q- 31 : Σ PFC	
3191	C77	2	Upper threshold value	
3193	C79	1	Duration	s
3194	C7A	1	Day	
3195	C7B	1	Month	
3196	C7C	1	Year	
3197	C7D	1	Hour	
3198	C7E	1	Minute	

Alarm n-9

Decimal address	Hexa. address	Number of words	Text	Unit
3200	C80	1	Output number (1 to 6)	
3201	C81	1	Lower threshold : 0 : no alarm 1 : I1 2 : I2 3 : I3 4 : In 5 : U12 6 : U23 7 : U31 8 : Σ P+ 9 : Σ Q+ 10 : Σ S 11 : F 12 : Σ PFL 15 : thd I1 16 : thd I2 17 : thd I3 18 : thd U12 19 : thd U23 20 : thd U31 21 : HOUR 22 : V1 23 : V2 24 : V3 25 : thd In 26 : thd V1 27 : thd V2 28 : thd V3 29 : Σ P- 30 : Σ Q- 31 : Σ PFC	

LAST 10 ALARMS EVENT LOG (FUNCTION 3)

Alarm n-9

Decimal address	Hexa. address	Number of words	Text	Unit
3202	C82	2	Lower threshold value	
3204	C84	1	Lower threshold : 0 : no alarm 1 : I1 2 : I2 3 : I3 4 : In 5 : U12 6 : U23 7 : U31 8 : $\Sigma P+$ 9 : $\Sigma Q+$ 10 : ΣS 11 : F 12 : ΣPFL 15 : thd I1 16 : thd I2 17 : thd I3 18 : thd U12 19 : thd U23 20 : thd U31 21 : HOUR 22 : V1 23 : V2 24 : V3 25 : thd In 26 : thd V1 27 : thd V2 28 : thd V3 29 : $\Sigma P-$ 30 : $\Sigma Q-$ 31 : ΣPFC	
3205	C85	2	Upper threshold value	
3207	C87	1	Duration	s
3208	C88	1	Day	
3209	C89	1	Month	
3210	C8A	1	Year	
3211	C8B	1	Hour	
3212	C8C	1	Minute	
3213	C8D	1	Second	

COMMUNICATION

LAST 10 ALARMS EVENT LOG (FUNCTION 3)

Alarm n-10

Decimal address	Hexa. address	Number of words	Text	Unit
3214	C8E	1	Output number (1 to 6)	
3215	C8F	1	Lower threshold : 0 : no alarm 1 : I1 2 : I2 3 : I3 4 : In 5 : U12 6 : U23 7 : U31 8 : $\Sigma P+$ 9 : $\Sigma Q+$ 10 : ΣS 11 : F 12 : ΣPFL 15 : thd I1 16 : thd I2 17 : thd I3 18 : thd U12 19 : thd U23 20 : thd U31 21 : HOUR 22 : V1 23 : V2 24 : V3 25 : thd In 26 : thd V1 27 : thd V2 28 : thd V3 29 : $\Sigma P-$ 30 : $\Sigma Q-$ 31 : ΣPFC	
3216	C90	2	Lower threshold value	
3218	C92	1	Lower threshold : 0 : no alarm 1 : I1 2 : I2 3 : I3 4 : In 5 : U12 6 : U23 7 : U31 8 : $\Sigma P+$ 9 : $\Sigma Q+$ 10 : ΣS 11 : F 12 : ΣPFL 15 : thd I1 16 : thd I2 17 : thd I3 18 : thd U12 19 : thd U23 20 : thd U31 21 : HOUR	

LAST 10 ALARMS EVENT LOG (FUNCTION 3)

Alarm n-10

Decimal address	Hexa. address	Number of words	Text	Unit
			22 : V1 23 : V2 24 : V3 25 : thd In 26 : thd V1 27 : thd V2 28 : thd V3 29 : Σ P- 30 : Σ Q- 31 : Σ PFC	
3219	C93	2	Upper threshold value	
3221	C95	1	Duration	s
3222	C96	1	Day	
3223	C97	1	Month	
3224	C98	1	Year	
3225	C99	1	Hour	
3226	C9A	1	Minute	
3227	C9B	1	Second	

Zone size: 140 words (decimal) or 8C (hexadecimal).

LAST 10 VOLTAGE DIPS EVENT LOG / SAG (FUNCTION 3)

Voltage dip n-1

Decimal address	Hexa. address	Number of words	Text	Unit
3328	D00	1	Query! : phase-to-phase residual value : 0 : no 5: U12 6: U23 7: U31	
3329	D01	2	Value	
3331	D03	1	Query! : phase-to-neutral residual value : 22 : V1 23 : V2 24 : V3	
3332	D04	2	Value	
3334	D06	2	Duration	ms
3336	D08	1	Day	
3337	D09	1	Month	
3338	D0A	1	Year	
3339	D0B	1	Hour	
3340	D0C	1	Minute	
3341	D0D	1	Second	

COMMUNICATION

LAST 10 VOLTAGE DIPS EVENT LOG / SAG (FUNCTION 3)

Voltage dip n-2

Decimal address	Hexa. address	Number of words	Text	Unit
3342	D0E	1	Query! : phase-to-phase residual value : 0 : no 5: U12 6: U23 7: U31	
3343	D0F	2	Value	
3345	D11	1	Query! : phase-to-neutral residual value : 0 : no 22 : V1 23 : V2 24 : V3	
3346	D12	2	Value	
3348	D14	2	Duration	ms
3350	D16	1	Day	
3351	D17	1	Month	
3352	D18	1	Year	
3353	D19	1	Hour	
3354	D1A	1	Minute	
3355	D1B	1	Second	

Voltage dip n-3

Decimal address	Hexa. address	Number of words	Text	Unit
3356	D1C	1	Query! : phase-to-phase residual value : 0 : no 5: U12 6: U23 7: U31	
3357	D1D	2	Value	
3359	D1F	1	Query! : phase-to-neutral residual value : 0 : no 22 : V1 23 : V2 24 : V3	
3360	D20	2	Value	
3362	D22	2	Duration	ms
3364	D24	1	Day	
3365	D25	1	Month	
3366	D26	1	Year	
3367	D27	1	Hour	
3368	D28	1	Minute	
3369	D29	1	Second	

LAST 10 VOLTAGE DIPS EVENT LOG / SAG (FUNCTION 3)

Voltage dip n-4

Decimal address	Hexa. address	Number of words	Text	Unit
3370	D2A	1	Query! : phase-to-phase residual value : 0 : no 5: U12 6: U23 7: U31	
3371	D2B	2	Value	
3373	D2D	1	Query! : phase-to-neutral residual value : 0 : no 22 : V1 23 : V2 24 : V3	
3374	D2E	2	Value	
3376	D30	2	Duration	ms
3378	D32	1	Day	
3379	D33	1	Month	
3380	D34	1	Year	
3381	D35	1	Hour	
3382	D36	1	Minute	
3383	D37	1	Second	

Voltage dip n-5

Decimal address	Hexa. address	Number of words	Text	Unit
3384	D38	1	Query! : phase-to-phase residual value: 0 : no 5: U12 6: U23 7: U31	
3385	D39	2	Value	
3387	D3B	1	Query! : phase-to-neutral residual value: 0 : no 22 : V1 23 : V2 24 : V3	
3388	D3C	2	Value	
3390	D3E	2	Duration	ms
3392	D40	1	Day	
3393	D41	1	Month	
3394	D42	1	Year	
3395	D43	1	Hour	
3396	D44	1	Minute	
3397	D45	1	Second	

COMMUNICATION

LAST 10 VOLTAGE DIPS EVENT LOG / SAG (FUNCTION 3)

Voltage dip n-6

Decimal address	Hexa. address	Number of words	Text	Unit
3398	D46	1	Query! : phase-to-phase residual value : 0 : no 5: U12 6: U23 7: U31	
3399	D47	2	Value	
3401	D49	1	Query! : phase-to-neutral residual value : 0 : no 22 : V1 23 : V2 24 : V3	
3402	D4A	2	Value	
3404	D4C	2	Duration	ms
3406	D4E	1	Day	
3407	D4F	1	Month	
3408	D50	1	Year	
3409	D51	1	Hour	
3410	D52	1	Minute	
3411	D53	1	Second	

Voltage dip n-7

Decimal address	Hexa. address	Number of words	Text	Unit
3412	D54	1	Query! : phase-to-phase residual value : 0 : no 5: U12 6: U23 7: U31	
3413	D55	2	Value	
3415	D57	1	Query! : phase-to-neutral residual value : 0 : no 22 : V1 23 : V2 24 : V3	
3416	D58	2	Value	
3418	D5A	2	Duration	ms
3420	D5C	1	Day	
3421	D5D	1	Month	
3422	D5E	1	Year	
3423	D5F	1	Hour	
3424	D60	1	Minute	
3425	D61	1	Second	

LAST 10 VOLTAGE DIPS EVENT LOG / SAG (FUNCTION 3)

Voltage dip n-8

Decimal address	Hexa. address	Number of words	Text	Unit
3426	D62	1	Query! : phase-to-phase residual value : 0 : no 5: U12 6: U23 7: U31	
3427	D63	2	Value	
3429	D65	1	Query! : phase-to-neutral residual value : 0 : no 22 : V1 23 : V2 24 : V3	
3430	D66	2	Value	
3432	D68	2	Duration	ms
3434	D6A	1	Day	
3435	D6B	1	Month	
3436	D6C	1	Year	
3437	D6D	1	Hour	
3438	D6E	1	Minute	
3439	D6F	1	Second	

Voltage dip n-9

Decimal address	Hexa. address	Number of words	Text	Unit
3440	D70	1	Query! : phase-to-phase residual value : 0 : no 5: U12 6: U23 7: U31	
3441	D71	2	Value	
3443	D73	1	Query! : phase-to-neutral residual value : 0 : no 22 : V1 23 : V2 24 : V3	
3444	D74	2	Value	
3446	D76	2	Duration	ms
3448	D78	1	Day	
3449	D79	1	Month	
3450	D7A	1	Year	
3451	D7B	1	Hour	
3452	D7C	1	Minute	
3453	D7D	1	Second	

COMMUNICATION

LAST 10 VOLTAGE DIPS EVENT LOG / SAG (FUNCTION 3)

Voltage dip n-10

Decimal address	Hexa. address	Number of words	Text	Unit
3454	D7E	1	Query! : phase-to-phase residual value : 0 : no 5: U12 6: U23 7: U31	
3455	D7F	2	Value	
3457	D81	1	Query! : phase-to-neutral residual value : 0 : no 22 : V1 23 : V2 24 : V3	
3458	D82	2	Value	
3460	D84	2	Duration	ms
3462	D86	1	Day	
3463	D87	1	Month	
3464	D88	1	Year	
3465	D89	1	Hour	
3466	D8A	1	Minute	
3467	D8B	1	Second	

Zone size: 140 words (decimal) or 8C (hexadecimal).

LAST 10 VOLTAGE SURGE EVENT LOG / SWELL (FUNCTION 3)

Voltage surge n-1

Decimal address	Hexa. address	Number of words	Text	Unit
3584	E00	1	Query! : maximum phase-to-phase value : 0 : no 5: U12 6: U23 7: U31	
3585	E01	2	Value	
3587	E03	1	Query! : maximum phase-to-neutral value : 0 : no 22 : V1 23 : V2 24 : V3	
3588	E04	2	Value	
3590	E06	2	Duration	ms
3592	E08	1	Day	
3593	E09	1	Month	
3594	E0A	1	Year	
3595	E0B	1	Hour	
3596	E0C	1	Minute	
3597	E0D	1	Second	

LAST 10 VOLTAGE SURGE EVENT LOG / SWELL (FUNCTION 3)

Voltage surge n-2

Decimal address	Hexa. address	Number of words	Text	Unit
3598	E0E	1	Query! : maximum phase-to-phase value : 0 : no 5: U12 6: U23 7: U31	
3599	E0F	2	Value	
3601	E11	1	Query! : maximum phase-to-neutral value : 0 : no 22 : V1 23 : V2 24 : V3	
3602	E12	2	Value	
3604	E14	2	Duration	ms
3606	E16	1	Day	
3607	E17	1	Month	
3608	E18	1	Year	
3609	E19	1	Hour	
3610	E1A	1	Minute	
3611	E1B	1	Second	

Voltage surge n-3

Decimal address	Hexa. address	Number of words	Text	Unit
3612	E1C	1	Query! : maximum phase-to-phase value : 0 : no 5: U12 6: U23 7: U31	
3613	E1D	2	Value	
3615	E1F	1	Query! : maximum phase-to-neutral value : 0 : no 22 : V1 23 : V2 24 : V3	
3616	E20	2	Value	
3618	E22	2	Duration	ms
3620	E24	1	Day	
3621	E25	1	Month	
3622	E26	1	Year	
3623	E27	1	Hour	
3624	E28	1	Minute	
3625	E29	1	Second	

COMMUNICATION

LAST 10 VOLTAGE SURGE EVENT LOG / SWELL (FUNCTION 3)

Voltage surge n-4

Decimal address	Hexa. address	Number of words	Text	Unit
3626	E2A	1	Query! : maximum phase-to-phase value : 0 : no 5: U12 6: U23 7: U31	
3627	E2B	2	Value	
3629	E2D	1	Query! : maximum phase-to-neutral value : 0 : no 22 : V1 23 : V2 24 : V3	
3630	E2E	2	Value	
3632	E30	2	Duration	ms
3634	E32	1	Day	
3635	E33	1	Month	
3636	E34	1	Year	
3637	E35	1	Hour	
3638	E36	1	Minute	
3639	E37	1	Second	

Voltage surge n-5

Decimal address	Hexa. address	Number of words	Text	Unit
3640	E38	1	Query! : maximum phase-to-phase value : 0 : no 5: U12 6: U23 7: U31	
3641	E39	2	Value	
3643	E3B	1	Query! : maximum phase-to-neutral value : 0 : no 22 : V1 23 : V2 24 : V3	
3644	E3C	2	Value	
3646	E3E	2	Duration	ms
3648	E40	1	Day	
3649	E41	1	Month	
3650	E42	1	Year	
3651	E43	1	Hour	
3652	E44	1	Minute	
3653	E45	1	Second	

LAST 10 VOLTAGE SURGE EVENT LOG / SWELL (FUNCTION 3)

Voltage surge n-6

Decimal address	Hexa. address	Number of words	Text	Unit
3654	E46	1	Query! : maximum phase-to-phase value : 0 : no 5: U12 6: U23 7: U31	
3655	E47	2	Value	
3657	E49	1	Query! : maximum phase-to-neutral value : 0 : no 22 : V1 23 : V2 24 : V3	
3658	E4A	2	Value	
3660	E4C	2	Duration	ms
3662	E4E	1	Day	
3663	E4F	1	Month	
3664	E50	1	Year	
3665	E51	1	Hour	
3666	E52	1	Minute	
3667	E53	1	Second	

Voltage surge n-7

Decimal address	Hexa. address	Number of words	Text	Unit
3668	E54	1	Query! : maximum phase-to-phase value : 0 : no 5: U12 6: U23 7: U31	
3669	E55	2	Value	
3671	E57	1	Query! : maximum phase-to-neutral value : 0 : no 22 : V1 23 : V2 24 : V3	
3672	E58	2	Value	
3674	E5A	2	Duration	ms
3676	E5C	1	Day	
3677	E5D	1	Month	
3678	E5E	1	Year	
3679	E5F	1	Hour	
3680	E60	1	Minute	
3681	E61	1	Second	

COMMUNICATION

LAST 10 VOLTAGE SURGE EVENT LOG / SWELL (FUNCTION 3)

Voltage surge n-8

Decimal address	Hexa. address	Number of words	Text	Unit
3682	E62	1	Query! : maximum phase-to-phase value : 0 : no 5: U12 6: U23 7: U31	
3683	E63	2	Value	
3685	E65	1	Query! : maximum phase-to-neutral value : 0 : no 22 : V1 23 : V2 24 : V3	
3686	E66	2	Value	
3688	E68	2	Duration	ms
3690	E6A	1	Day	
3691	E6B	1	Month	
3692	E6C	1	Year	
3693	E6D	1	Hour	
3694	E6E	1	Minute	
3695	E6F	1	Second	

Voltage surge n-9

Decimal address	Hexa. address	Number of words	Text	Unit
3696	E70	1	Query! : maximum phase-to-phase value : 0 : no 5: U12 6: U23 7: U31	
3697	E71	2	Value	
3699	E73	1	Query! : maximum phase-to-neutral value : 0 : no 22 : V1 23 : V2 24 : V3	
3700	E74	2	Value	
3702	E76	2	Duration	ms
3704	E78	1	Day	
3705	E79	1	Month	
3706	E7A	1	Year	
3707	E7B	1	Hour	
3708	E7C	1	Minute	
3709	E7D	1	Second	

LAST 10 VOLTAGE SURGE EVENT LOG / SWELL (FUNCTION 3)

Voltage surge n-10

Decimal address	Hexa. address	Number of words	Text	Unit
3710	E7E	1	Query! : maximum phase-to-phase value : 0 : no 5: U12 6: U23 7: U31	
3711	E7F	2	Value	
3713	E81	1	Query! : maximum phase-to-neutral value : 0 : no 22 : V1 23 : V2 24 : V3	
3714	E82	2	Value	
3716	E84	2	Duration	ms
3718	E86	1	Day	
3719	E87	1	Month	
3720	E88	1	Year	
3721	E89	1	Hour	
3722	E8A	1	Minute	
3723	E8B	1	Second	

Zone size: 140 words (decimal) or 8C (hexadecimal).

MINIMUM AND MAXIMUM INSTANTANEOUS VALUES (FUNCTION 3)

Decimal address	Hexa. address	Number of words	Text	Unit
3840	F00	2	3I minimum	mA
3842	F02	1	Day	
3843	F03	1	Month	
3844	F04	1	Year	
3845	F05	1	Hour	
3846	F06	1	Minute	
3847	F07	1	Second	
3848	F08	2	3I maximum	mA
3850	F0A	1	Day	
3851	F0B	1	Month	
3852	F0C	1	Year	
3853	F0D	1	Hour	
3854	F0E	1	Minute	
3855	F0F	1	Second	
3856	F10	2	IN minimum	mA
3858	F12	1	Day	
3859	F13	1	Month	
3860	F14	1	Year	
3861	F15	1	Hour	
3862	F16	1	Minute	
3863	F17	1	Second	
3864	F18	2	IN maximum	mA
3866	F1A	1	Day	
3867	F1B	1	Month	
3868	F1C	1	Year	
3869	F1D	1	Hour	
3870	F1E	1	Minute	
3871	F1F	1	Second	
3872	F20	2	3U minimum	mV

COMMUNICATION

MINIMUM AND MAXIMUM INSTANTANEOUS VALUES (FUNCTION 3)

Decimal address	Hexa. address	Number of words	Text	Unit
3874	F22	1	Day	
3875	F23	1	Month	
3876	F24	1	Year	
3877	F25	1	Hour	
3878	F26	1	Minute	
3879	F27	1	Second	
3880	F28	2	3U maximum	0.01 V
3882	F2A	1	Day	
3883	F2B	1	Month	
3884	F2C	1	Year	
3885	F2D	1	Hour	
3886	F2E	1	Minute	
3887	F2F	1	Second	
3888	F30	2	3V minimum	0.01 V
3890	F32	1	Day	
3891	F33	1	Month	
3892	F34	1	Year	
3893	F35	1	Hour	
3894	F36	1	Minute	
3895	F37	1	Second	
3896	F38	2	3V maximum	0.01 V
3898	F3A	1	Day	
3899	F3B	1	Month	
3900	F3C	1	Year	
3901	F3D	1	Hour	
3902	F3E	1	Minute	
3903	F3F	1	Second	
3904	F40	2	F minimum	Hz / 100
3906	F42	1	Day	
3907	F43	1	Month	
3908	F44	1	Year	
3909	F45	1	Hour	
3910	F46	1	Minute	
3911	F47	1	Second	
3912	F48	2	F maximum	Hz / 100
3914	F4A	1	Day	
3915	F4B	1	Month	
3916	F4C	1	Year	
3917	F4D	1	Hour	
3918	F4E	1	Minute	
3919	F4F	1	Second	
3920	F50	2	Σ PF minimum	1 / 1000
3922	F52	1	Day	
3923	F53	1	Month	
3924	F54	1	Year	
3925	F55	1	Hour	
3926	F56	1	Minute	
3927	F57	1	Second	
3928	F58	2	Σ PF maximum	1 / 1000
3930	F5A	1	Day	
3931	F5B	1	Month	
3932	F5C	1	Year	
3933	F5D	1	Hour	
3934	F5E	1	Minute	
3935	F5F	1	Second	
3936	F60	2	Σ P + minimum	kW / 1000

MINIMUM AND MAXIMUM INSTANTANEOUS VALUES (FUNCTION 3)

Decimal address	Hexa. address	Number of words	Text	Unit
3938	F62	1	Day	
3939	F63	1	Month	
3940	F64	1	Year	
3941	F65	1	Hour	
3942	F66	1	Minute	
3943	F67	1	Second	
3944	F68	2	ΣP + maximum	kW / 100
3946	F6A	1	Day	
3947	F6B	1	Month	
3948	F6C	1	Year	
3949	F6D	1	Hour	
3950	F6E	1	Minute	
3951	F6F	1	Second	
3952	F70	2	ΣP - minimum	kW / 100
3954	F72	1	Day	
3955	F73	1	Month	
3956	F74	1	Year	
3957	F75	1	Hour	
3958	F76	1	Minute	
3959	F77	1	Second	
3960	F78	2	ΣP - maximum	kvar / 100
3962	F7A	1	Day	
3963	F7B	1	Month	
3964	F7C	1	Year	
3965	F7D	1	Hour	
3966	F7E	1	Minute	
3967	F7F	1	Second	
3968	F80	2	ΣQ + minimum	kvar / 100
3970	F82	1	Day	
3971	F83	1	Month	
3972	F84	1	Year	
3973	F85	1	Hour	
3974	F86	1	Minute	
3975	F87	1	Second	
3976	F88	2	ΣQ + maximum	kvar / 100
3978	F8A	1	Day	
3979	F8B	1	Month	
3980	F8C	1	Year	
3981	F8D	1	Hour	
3982	F8E	1	Minute	
3983	F8F	1	Second	
3984	F90	2	ΣQ - minimum	kvar / 100
3986	F92	1	Day	
3987	F93	1	Month	
3988	F94	1	Year	
3989	F95	1	Hour	
3990	F96	1	Minute	
3991	F97	1	Second	
3992	F98	2	ΣQ - maximum	kvar / 100
3994	F9A	1	Day	
3995	F9B	1	Month	
3996	F9C	1	Year	
3997	F9D	1	Hour	
3998	F9E	1	Minute	
3999	F9F	1	Second	
4000	FA0	2	ΣS minimum	kvar / 100

COMMUNICATION

MINIMUM AND MAXIMUM INSTANTANEOUS VALUES (FUNCTION 3)

Decimal address	Hexa. address	Number of words	Text	Unit
4002	FA2	1	Day	
4003	FA3	1	Month	
4004	FA4	1	Year	
4005	FA5	1	Hour	
4006	FA6	1	Minute	
4007	FA7	1	Second	
4008	FA8	2	ΣS maximum	kvar / 100
4010	FAA	1	Day	
4011	FAB	1	Month	
4012	FAC	1	Year	
4013	FAD	1	Hour	
4014	FAE	1	Minute	
4015	FAF	1	Second	
4016	FB0	2	THD 3I minimum	0.10 %
4018	FB2	1	Day	
4019	FB3	1	Month	
4020	FB4	1	Year	
4021	FB5	1	Hour	
4022	FB6	1	Minute	
4023	FB7	1	Second	
4024	FB8	2	THD 3I maximum	0.10 %
4026	FBA	1	Day	
4027	FBB	1	Month	
4028	FBC	1	Year	
4029	FBD	1	Hour	
4030	FBE	1	Minute	
4031	FBF	1	Second	
4032	FC0	2	THD IN minimum	0.10 %
4034	FC2	1	Day	
4035	FC3	1	Month	
4036	FC4	1	Year	
4037	FC5	1	Hour	
4038	FC6	1	Minute	
4039	FC7	1	Second	
4040	FC8	2	THD IN maximum	0.10 %
4042	FCA	1	Day	
4043	FCB	1	Month	
4044	FCC	1	Year	
4045	FCD	1	Hour	
4046	FCE	1	Minute	
4047	FCF	1	Second	
4048	FD0	2	THD 3U minimum	0.10 %
4050	FD2	1	Day	
4051	FD3	1	Month	
4052	FD4	1	Year	
4053	FD5	1	Hour	
4054	FD6	1	Minute	
4055	FD7	1	Second	
4056	FD8	2	THD 3U maximum	0.10 %
4058	FDA	1	Day	
4059	FDB	1	Month	
4060	FDC	1	Year	
4061	FDD	1	Hour	
4062	FDE	1	Minute	
4063	FDF	1	Second	

MINIMUM AND MAXIMUM INSTANTANEOUS VALUES (FUNCTION 3)

Decimal address	Hexa. address	Number of words	Text	Unit
4064	FE0	2	THD 3V minimum	0.10 %
4066	FE2	1	Day	
4067	FE3	1	Month	
4068	FE4	1	Year	
4069	FE5	1	Hour	
4070	FE6	1	Minute	
4071	FE7	1	Second	
4072	FE8	2	THD 3V maximum	0.10 %
4074	FEA	1	Day	
4075	FEB	1	Month	
4076	FEC	1	Year	
4077	FED	1	Hour	
4078	FEE	1	Minute	

Zone size: 240 words (decimal) or FO (hexadecimal).

LAST 10 VOLTAGE CUT-OFFS EVENT LOG / SAG (FUNCTION 3)

Outage n-1

Decimal address	Hexa. address	Number of words	Text	Unit
4096	1000	1	Day	
4097	1001	1	Month	
4098	1002	1	Year	
4099	1003	1	Hour	
4100	1004	1	Minute	
4101	1005	1	Second	

Outage n-2

Decimal address	Hexa. address	Number of words	Text	Unit
4102	1006	1	Day	
4103	1007	1	Month	
4104	1008	1	Year	
4105	1009	1	Hour	
4106	100A	1	Minute	
4107	100B	1	Second	

Outage n-3

Decimal address	Hexa. address	Number of words	Text	Unit
4108	100C	1	Day	
4109	100D	1	Month	
4110	100E	1	Year	
4111	100F	1	Hour	
4112	1010	1	Minute	
4113	1011	1	Second	

Outage n-5

Decimal address	Hexa. address	Number of words	Text	Unit
4114	1012	1	Day	
4115	1013	1	Month	
4116	1014	1	Year	
4117	1015	1	Hour	
4118	1016	1	Minute	
4119	1017	1	Second	

COMMUNICATION

LAST 10 VOLTAGE CUT-OFFS EVENT LOG / SAG (FUNCTION 3)

Outage n-5

Decimal address	Hexa. address	Number of words	Text	Unit
4120	1018	1	Day	
4121	1019	1	Month	
4122	101A	1	Year	
4123	101B	1	Hour	
4124	101C	1	Minute	
4125	101D	1	Second	

Outage n-6

Decimal address	Hexa. address	Number of words	Text	Unit
4126	101E	1	Day	
4127	101F	1	Month	
4128	1020	1	Year	
4129	1021	1	Hour	
4130	1022	1	Minute	
4131	1023	1	Second	

Outage n-7

Decimal address	Hexa. address	Number of words	Text	Unit
4132	1024	1	Day	
4133	1025	1	Month	
4134	1026	1	Year	
4135	1027	1	Hour	
4136	1028	1	Minute	
4137	1029	1	Second	

Outage n-8

Decimal address	Hexa. address	Number of words	Text	Unit
4138	102A	1	Day	
4139	102B	1	Month	
4140	102C	1	Year	
4141	102D	1	Hour	
4142	102E	1	Minute	
4143	102F	1	Second	

Outage n-9

Decimal address	Hexa. address	Number of words	Text	Unit
4144	1030	1	Day	
4145	1031	1	Month	
4146	1032	1	Year	
4147	1033	1	Hour	
4148	1034	1	Minute	
4149	1035	1	Second	

Outage n-10

Decimal address	Hexa. address	Number of words	Text	Unit
4150	1036	1	Day	
4151	1037	1	Month	
4152	1038	1	Year	
4153	1039	1	Hour	
4154	103A	1	Minute	
4155	103B	1	Second	

Zone size: 60 words (decimal) or 3C (hexadecimal).

MEAN POWER EVENT LOG (FUNCTION 3)

Decimal address	Hexa. address	Number of words	Text	Unit
12288	3000	1	Mean active power pointer P+/P-	
12289	3001	1	Mean reactive power pointer Q+/Q-	
12290	3002	3	Date/Hour pointers updating	
12293	3004	4500	Zone P.1 saving mean active power values P+ / P-	
16793	4198	4500	Zone P.2 saving mean active power values P+ / P-	
21293	532C	4500	Zone Q.1 saving mean reactive power values Q+ / Q-	
25793	64C0	4500	Zone Q.2 saving mean reactive power values Q+ / Q-	
30293	7655	Zone end		

Zone size: 18005 words (decimal) or 4655 (hexadecimal).

MEAN VOLTAGE EVENT LOG (FUNCTION 3)

Decimal address	Hexa. address	Number of words	Text	Unit
32768	8000	1	Voltage pointer	
32769	8001	2	Date/Hour pointer updating	
32772	8003	875	3U, 3V voltage values	V/100
33647	836E	Zone end		

Zone size: 879 words (decimal) or 36F (hexadecimal).

MEAN FREQUENCY EVENT LOG (FUNCTION 3)

Decimal address	Hexa. address	Number of words	Text	Unit
36864	9000	1	Frequency pointer	
36865	9001	2	Date/Hour pointer updating	
36868	9003	8700	Frequency values	Hz
45568	B1FF	Zone end		

Zone size: 8704 words (decimal) or 220 (hexadecimal).

TECHNICAL CHARACTERISTICS

COMMUNICATION

RS485	2 or 3 wires half duplex
Protocole	JBUS/MODBUS® protocol / RTU mode
Speed	2400 to 38400 Bauds
Galvanic insulation	4 kV

CERTIFICATION

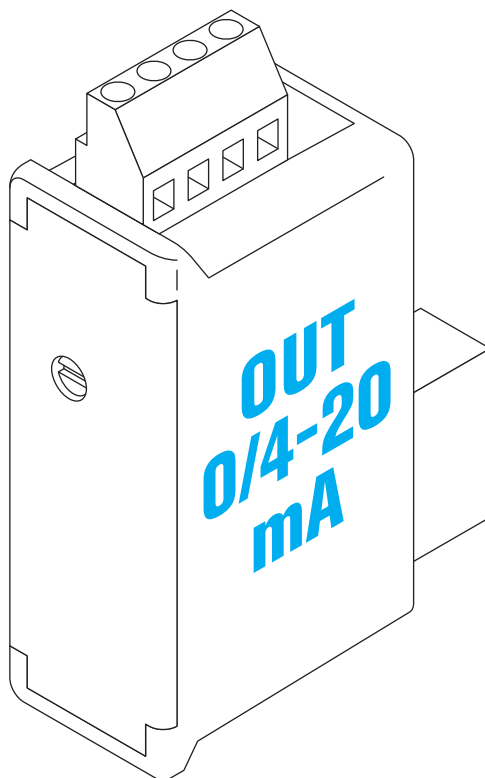
UL 61010-1	N° file: E25 7746
------------	-------------------

GLOSSARY OF ABBREVIATIONS

COM	Communication
ADR	Slave address
BDS	Speed of communication in bauds
PAR	Communication frame parity
NO	Without parity
Even	Even parity
Odd	Odd parity
STOP	Frame-stop beep
1	1 stop bit
2	2 stop bits

R-DPA96 A/AN - R-Module 4

2 Outputs 0/4 - 20 mA



PRELIMINARY OPERATIONS

When the package containing the optional module is received, the following points must be checked:

- the packing is in good condition,
- the product has not been damaged during transit,
- the product reference number conforms to your order,
- the package contains the product,
- the operating instructions.

PRESENTATION

This optional module must be connected to the R-DPA96 A/AN (ref. 4825 0A40, 4825 0A41, 4825 1A40, 4825 1A41). It provides 2 entirely configurable 0/4-20 mA analog outputs (threshold at 0 or 4 mA and threshold at 20 mA) on I1, I2, I3, In, U12, U23, U31, V1, V2, V3, ΣP, ΣQ, ΣS, ΣPF^{LC} and F. The power supply output can also be used using the 30 V function.

Up to a maximum of 2 modules, that is 4 analog outputs installed on one R-DPA96 A/AN.

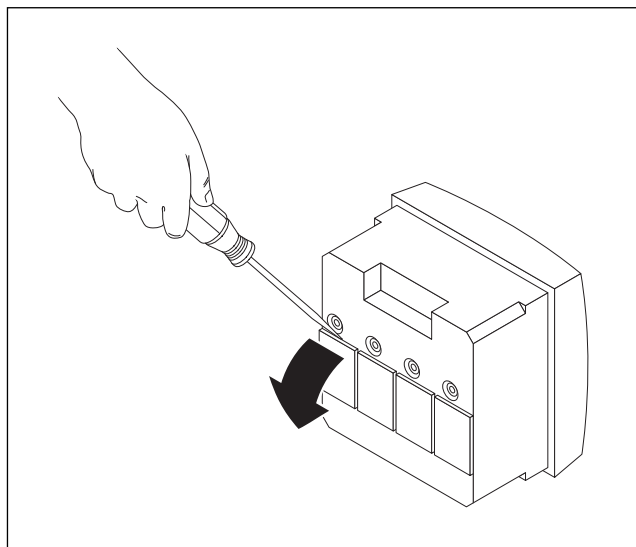
INSTALLATION

CONNECTION



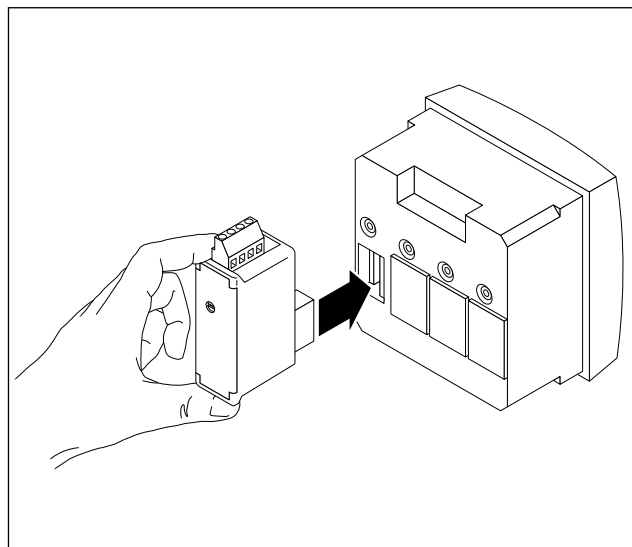
This R-DPA96 A/AN must be switched off.

①

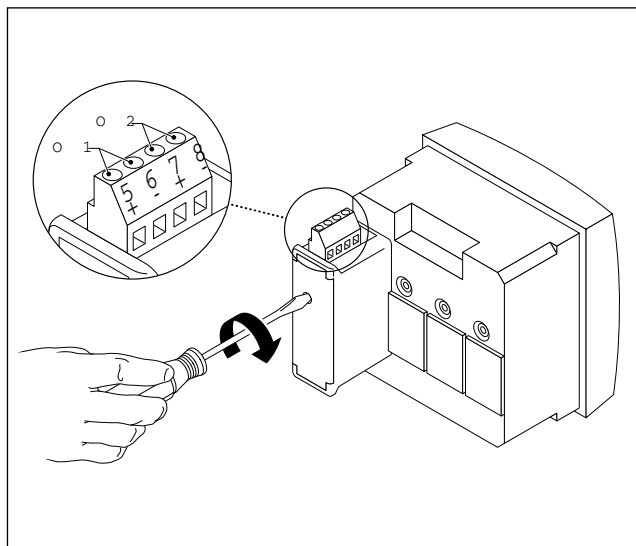


②

Fix the module

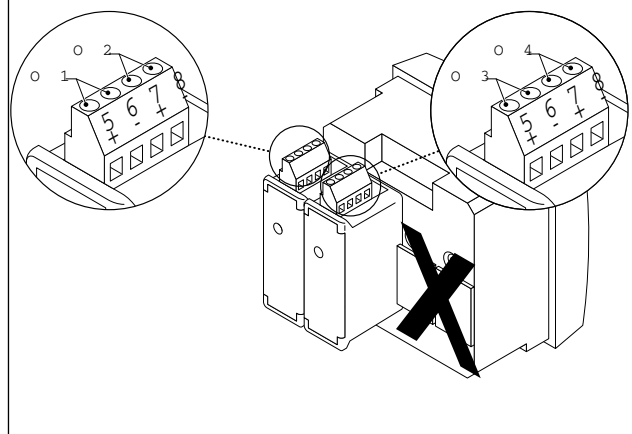


③



④

When using the four outputs, the two modules must be installed in the two left-hand positions as shown.



⑤

Follow indications when connecting the terminal.
Switch on voltage supply.

PROGRAMMING

I	U	P	MAX	H	E
F	F	PF	AVG		⊙
◀ / TEST ▶			▲	≡	PROG



I	U	P	MAX	H	E
F	F	PF	AVG		⊙
◀ / TEST ▶			▲	≡	PROG



I	U	P	MAX	H	E
F	F	PF	AVG		⊙
◀ / TEST ▶			▲	≡	PROG



I	U	P	MAX	H	E
F	F	PF	AVG		⊙
◀ / TEST ▶			▲	≡	PROG



I	U	P	MAX	H	E
F	F	PF	AVG		⊙
◀ / TEST ▶			▲	≡	PROG



I	U	P	MAX	H	E
F	F	PF	AVG		⊙
◀ / TEST ▶			▲	≡	PROG



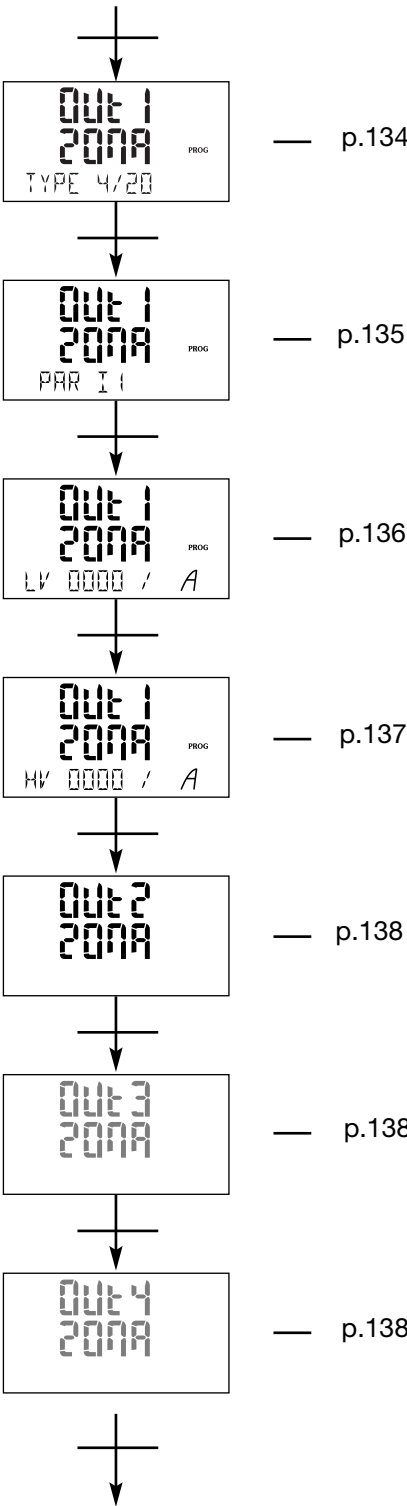
I	U	P	MAX	H	E
F	F	PF	AVG		⊙
◀ / TEST ▶			▲	≡	PROG



I	U	P	MAX	H	E
F	F	PF	AVG		⊙
◀ / TEST ▶			▲	≡	PROG



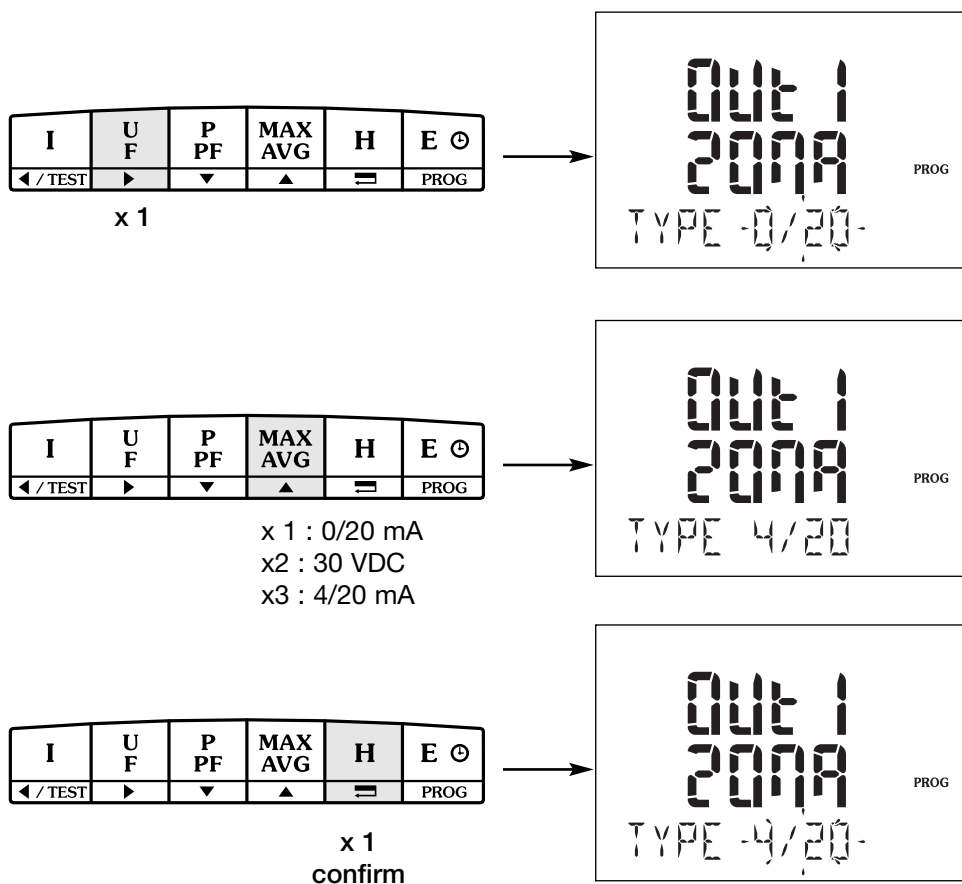
Previous menu



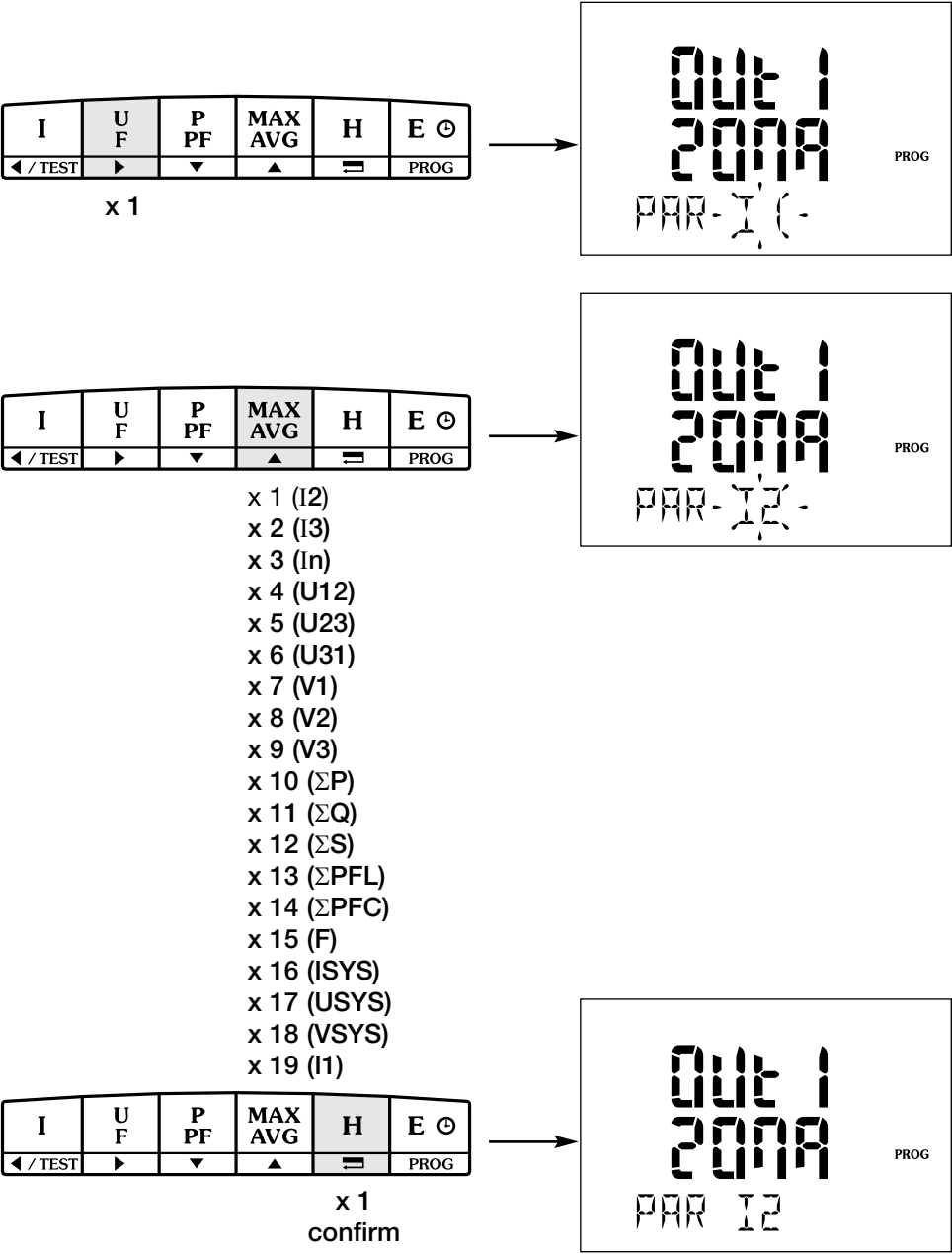
Following menu

PROGRAMMING

N°1 ANALOG OUTPUT TYPE - Example: TYPE = 0/20 mA



N° 1 ANALOG OUTPUT ALLOCATION - Example: PAR = I2



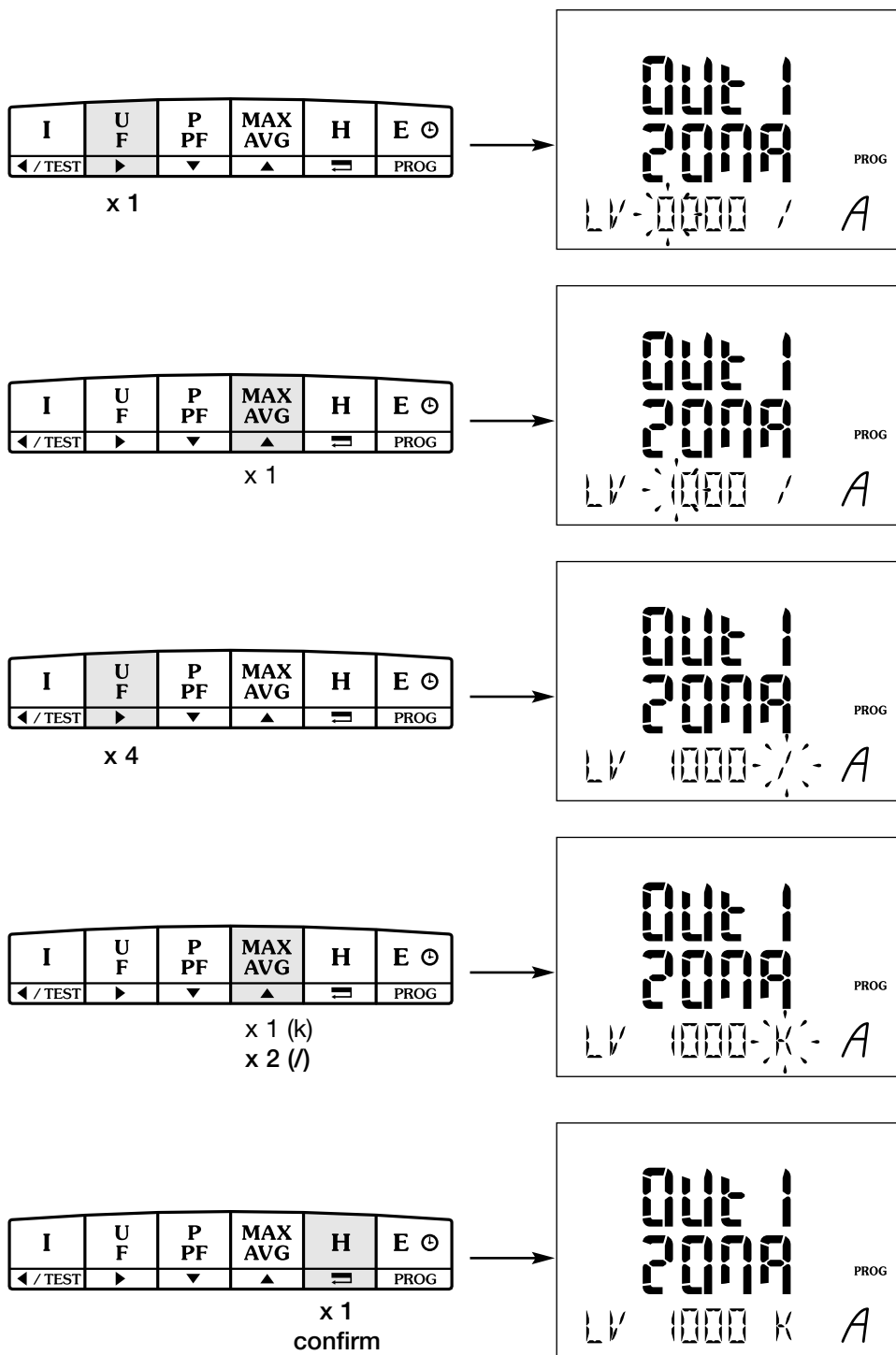
PROGRAMMING

PROGRAMMING OF THE N°1 ANALOG OUTPUT AT 0 TO 4 MA

Example: LV = 1000 kA

NB :

- For the power factor PF = 0 = 0 in programming; PF = 0,5 = 500 in programming; PF = 1 = 1 000 in programming.
- For the frequency F = 40 Hz = 4000 in programming, F = 50 Hz = 5000 in programming.
- For ΣP , ΣQ and ΣS the lower threshold (LV) corresponds to the negative value (example : -1000 kW).

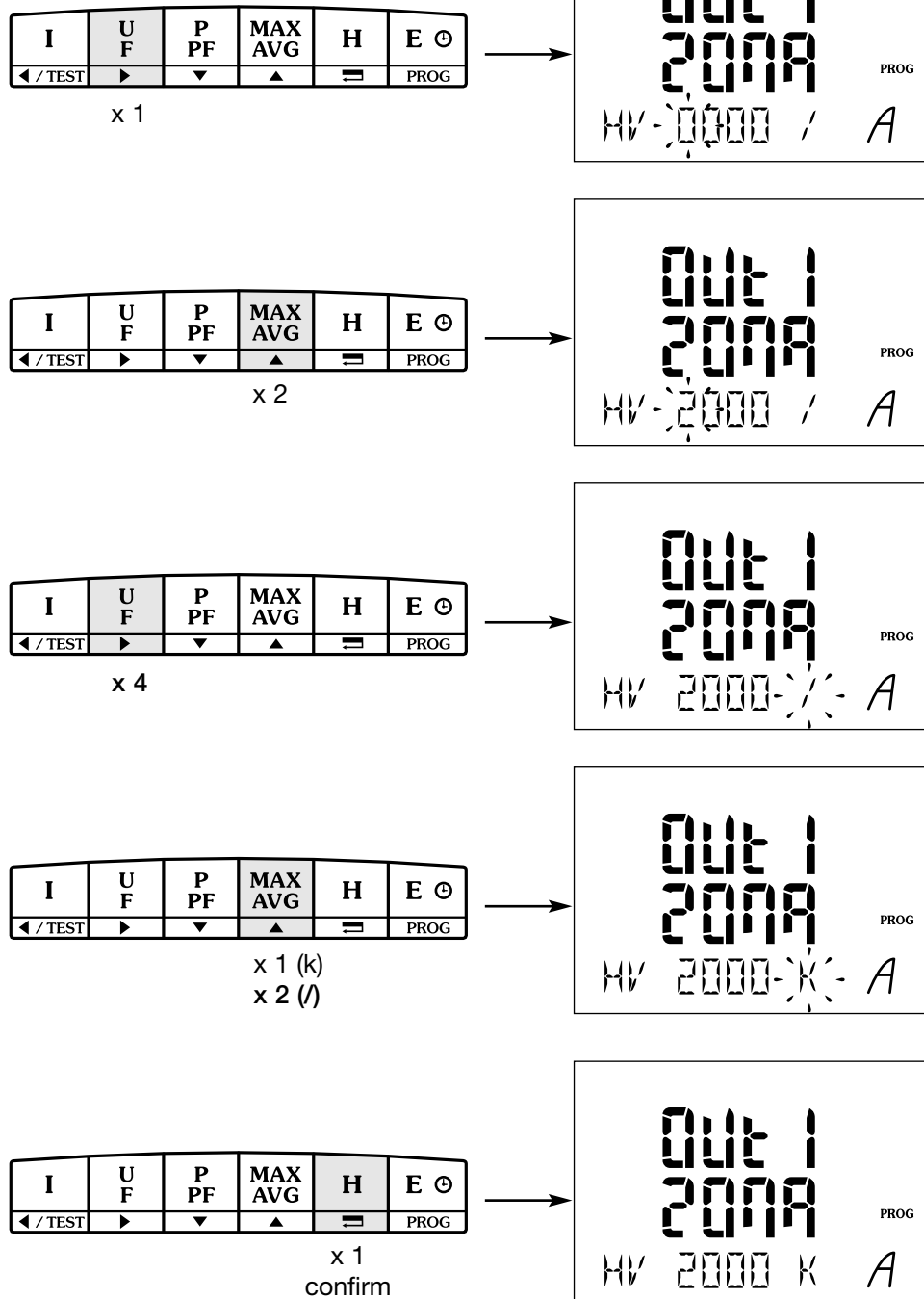


PROGRAMMING OF THE N°1 ANALOG OUTPUT AT 20 MA

Example: HV = 2000 kA

NB:

- For the power factor PF = 0 = 0 in programming; PF = 0.5 = 500 in programming; PF = 1 = 1000 in programming.
- For the frequency F = 40 Hz = 4000 in programming, F = 50 Hz = 5000 in programming.
- For ΣP , ΣQ and ΣS the lower threshold (LV) corresponds to the negative value (example : -1000 kW).



PROGRAMMING

PROGRAMMING OF N° 2, 3 AND 4 ANALOG OUTPUT

Proceed as for number 1 analog output. Press t to return to network programming (Net) or to pass to number 2 analog output programming or press for 3 seconds on PROG to quit programming.

TECHNICAL CHARACTERISTICS

Analog outputs

Load resistance	0 to 600 Ohms
Response time	1 sec
Galvanic insulation	2.5 kV
Accuracy (full scale)	0.5 %

Certification

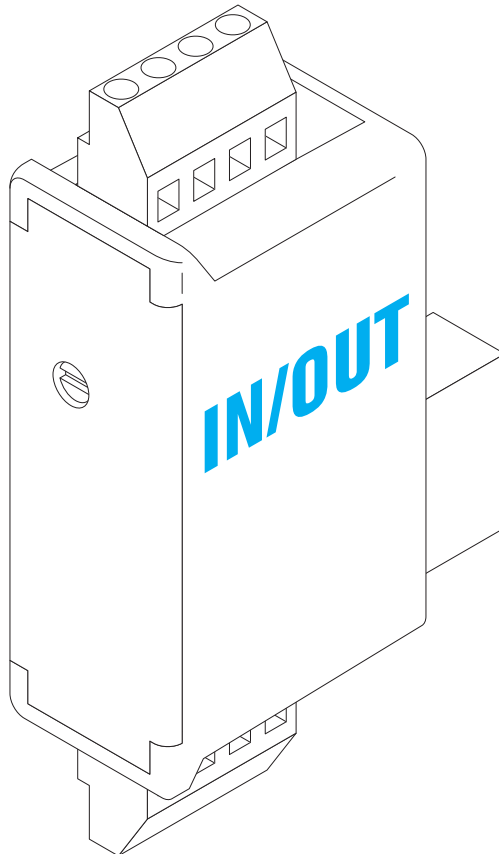
UL 61010-1	N° file: E25 7746
------------	-------------------

GLOSSARY OF ABBREVIATIONS

Out 1 20 mA ... Out 4 20 mA	Analogue outputs nos. 1 to 4
TYPE	Allocation of signal type 0-20 mA, 4-20 mA
0/20	Relay status control via RS 485
4/20	Signal 4-20 mA
30 VDC	30 VDC feed to supply the optocoupler inputs of the 2IN/2OUT module
I1, I2, I3	Current I1, I2, I3
In	Neutral current
U12, U23, U31	Phase-to-phase voltage U12, U23, U31
V1, V2, V3	Phase-to-neutral voltage V1, V2, V3
ΣP	Total active power
ΣQ	Total reactive power
ΣS	Total effective power
F	Frequency
ΣPFL	Power factor (lagging)
ΣPFC	Power factor (leading)
Out 1 20 mA LV ... Out 4 20 mA LV	Value at 0 or 4 mA
Out 1 20 mA HV ... Out 4 20 mA HV	Value at 4-20 mA
/	Value displayed (e.g. : A = Amps)
K	Kilo (e.g. : kA = kilo amps)
M	Mega (e.g. : MA = mega amps)
I SYS, U SYS, V SYS	Current, phase to phase voltage, phase to neutral voltage system

R-DPA96 A/AN - R-Module 5

2 Inputs / 2 Outputs



PRELIMINARY OPERATIONS

Check the following points as soon as you receive the optional module package:

- the packing is in good condition,
- the product has not been damaged during transit,
- the product reference number conforms to your order,
- the package contains the product,
- the operating instructions.

PRESENTATION

This optional module must be connected to the R-DPA96 A/AN - Main Module (ref. 4825 0A40, 4825 0A41, 4825 1A40, 4825 1A41). For the monitoring function, programming of an upper and lower threshold, of the hysteresis, of the time delay and of the run mode for 3I, 3U, 3V, In, ΣP , ΣQ , ΣS , F and $\Sigma F^{L/C}$, thd 3I, thd 3U, thd 3V, thd In, HOUr.

Possibility of installing up to 3 modules, that is 6 inputs / 6 outputs.

This module provides instant storage of min/max values for the 3U, 3F, In, $\pm \Sigma P$, $\pm \Sigma Q$, ΣPF , F, thd 3U, thd 3I and thd In via the RS 485.

Comment : For the DPA96 and DPA96 A (version 1.03), only 2 of the 6 outputs can be set for monitoring. For the 6 inputs, only 2 are visible on the display.

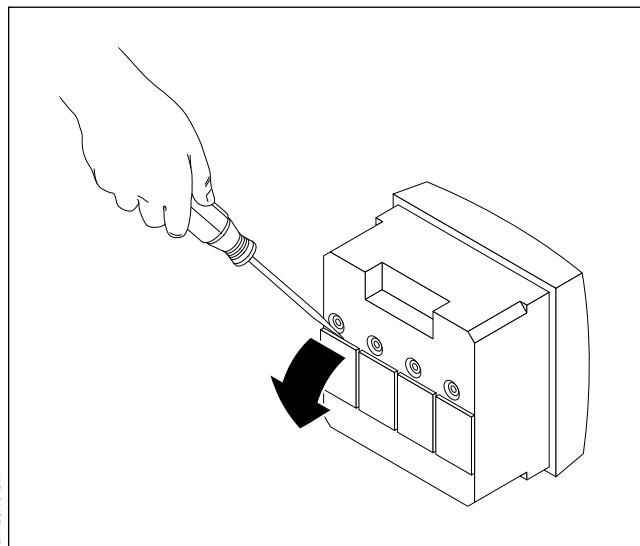
INSTALLATION

CONNECTION



This R-DPA96 A/AN must be switched off.

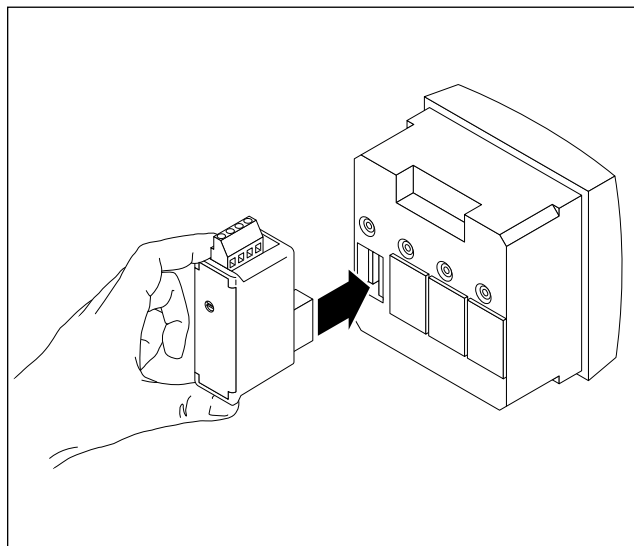
1



DPABA 342 A

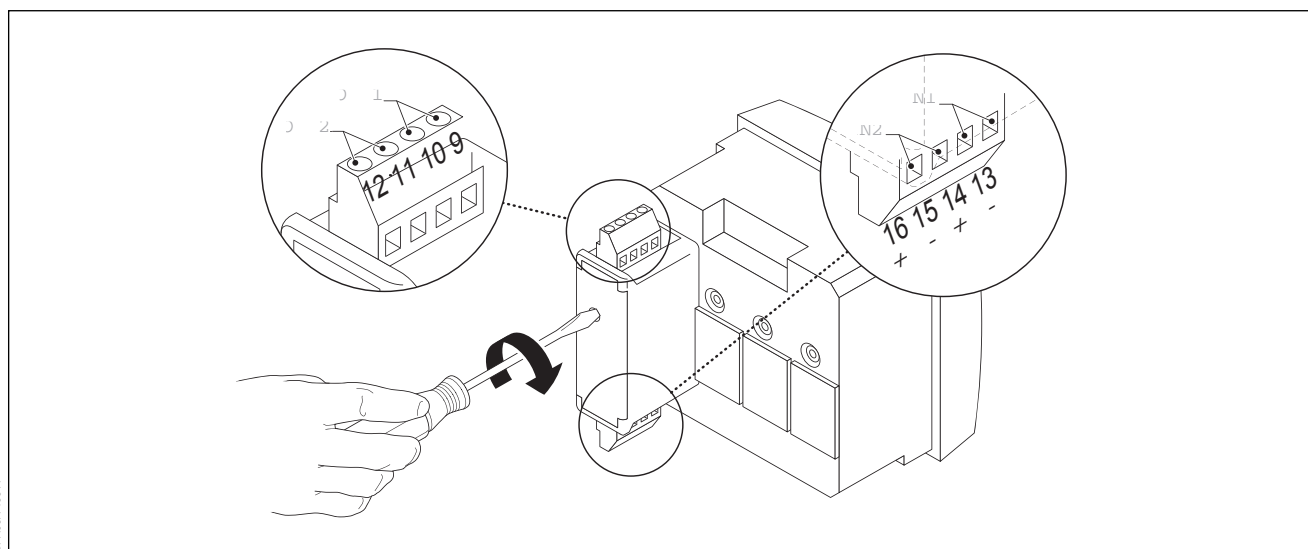
2

Fix the module



DPABA 343 A

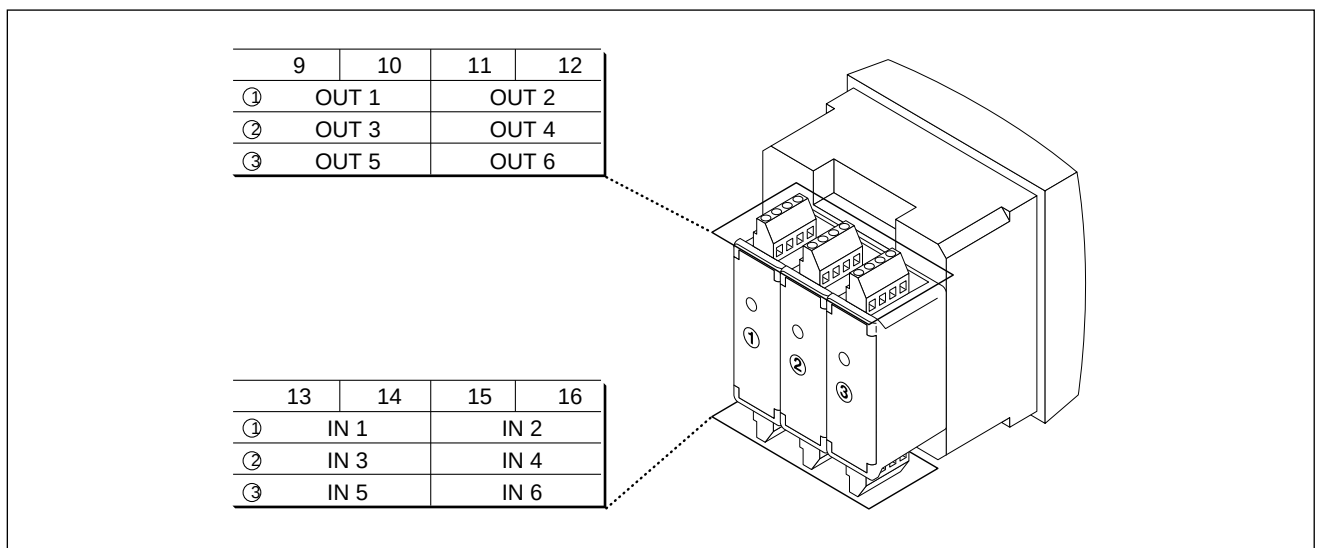
3



DPABA 433 A

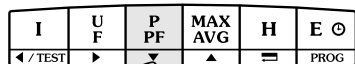
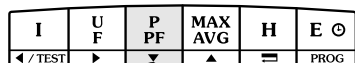
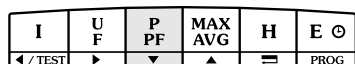
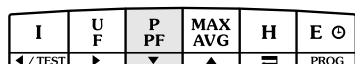
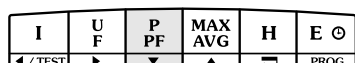
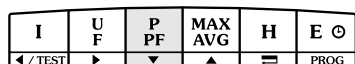
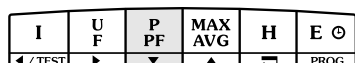
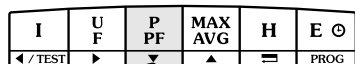
CONNECTION

- ④ Follow indications when connecting the terminal.
Switch on voltage supply.

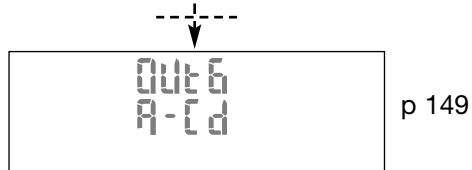
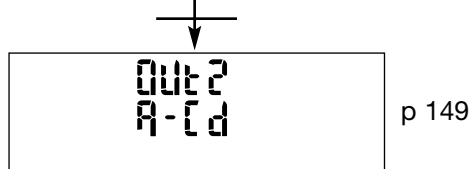
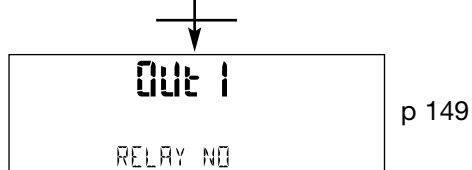
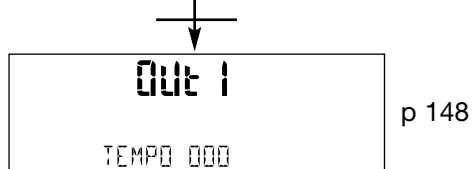
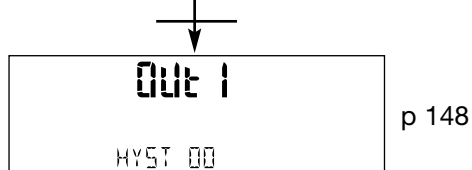
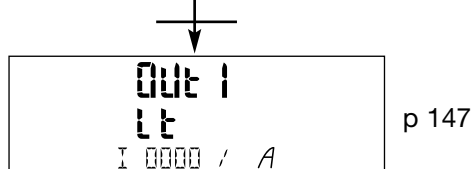
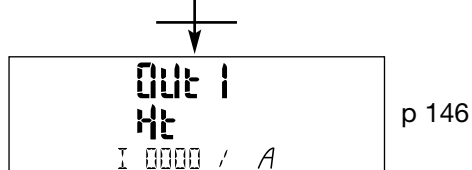
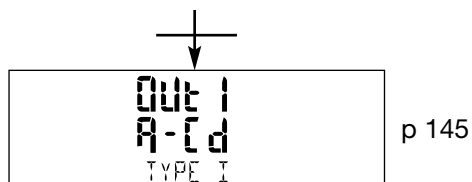


- ⑤ When installing 2 or 3 modules (maximum), the modules should be installed as indicated above.

PROGRAMMING

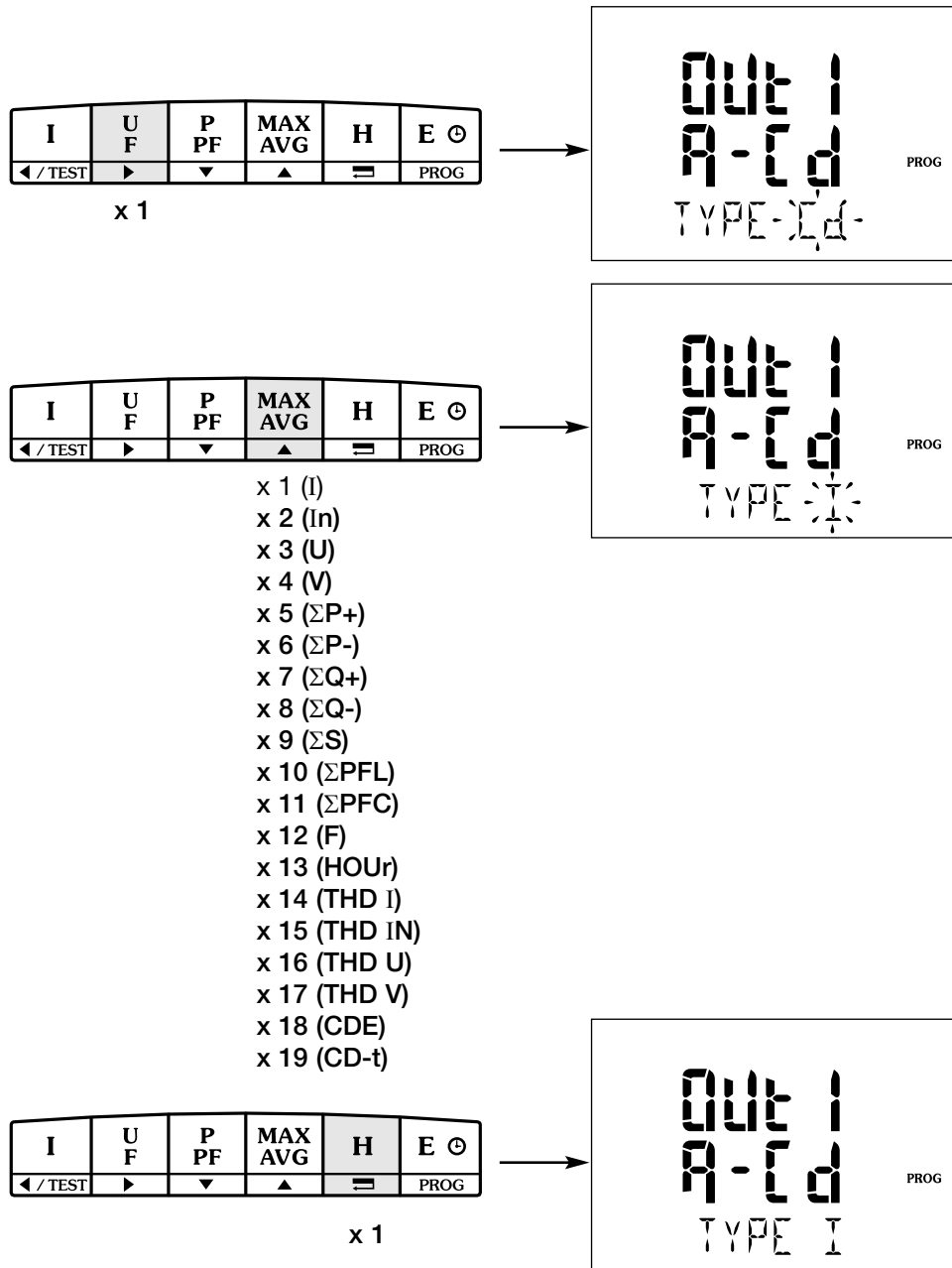


Previous menu



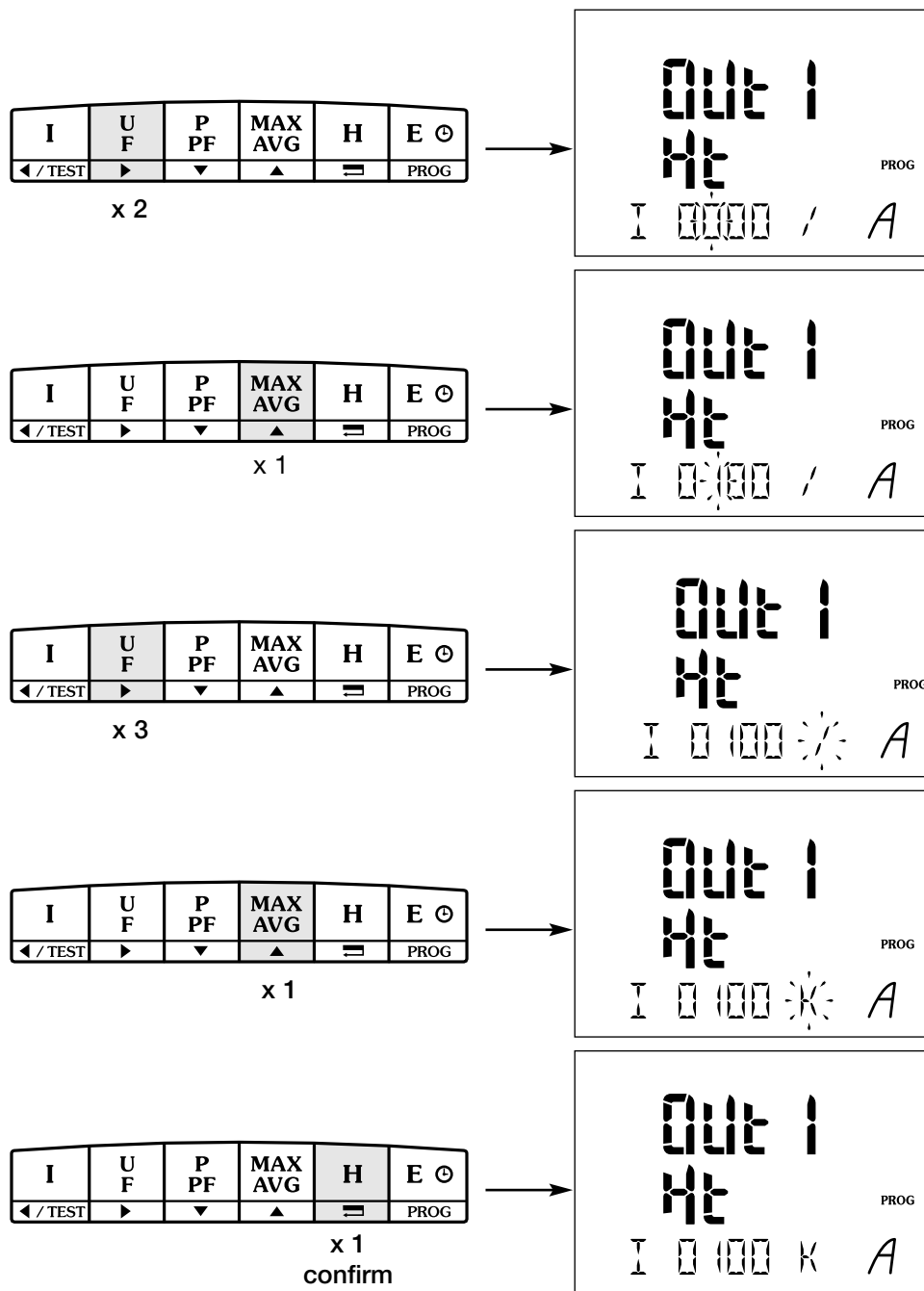
Following menu

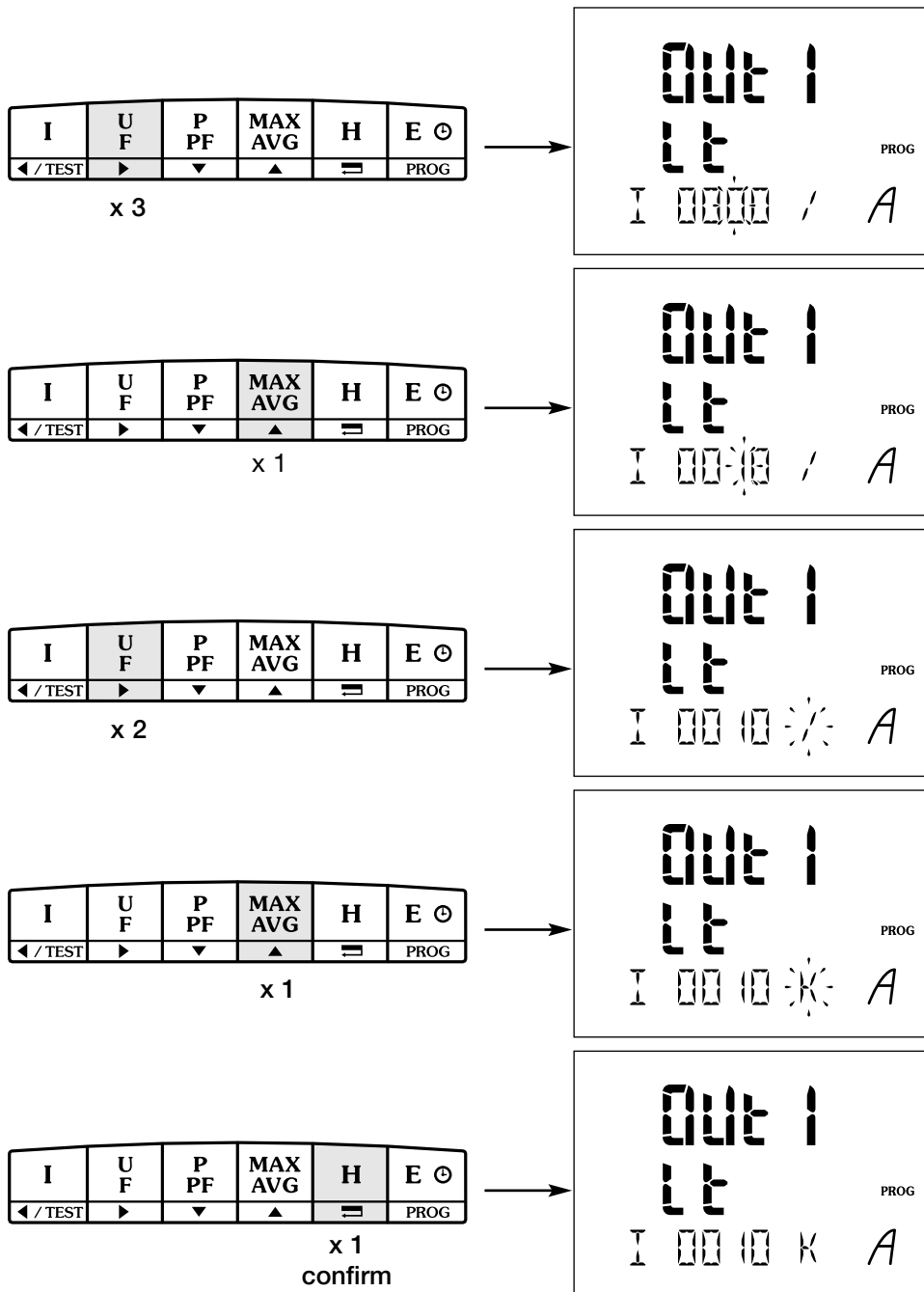
N°1 OUTPUT RELAY TYPE - Example: TYPE = I



PROGRAMMING

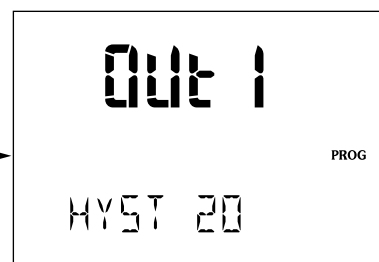
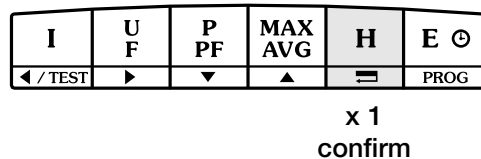
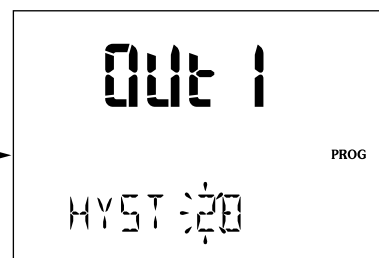
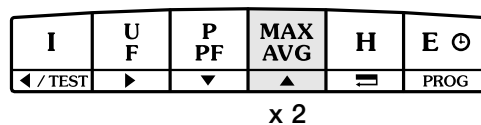
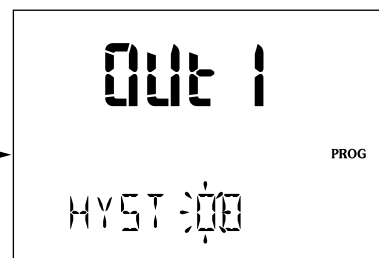
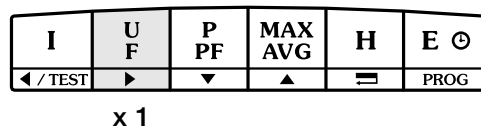
N° 1 OUTPUT RELAY UPPER THRESHOLD - Example: Ht = 100 kA



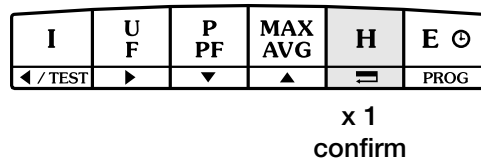
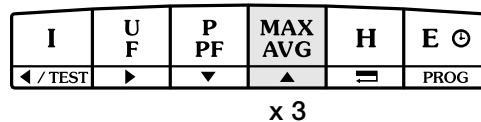
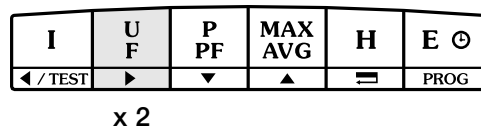
N° 1 OUTPUT RELAY LOWER THRESHOLD - Example: $I_t = 10 \text{ kA}$ 

PROGRAMMING

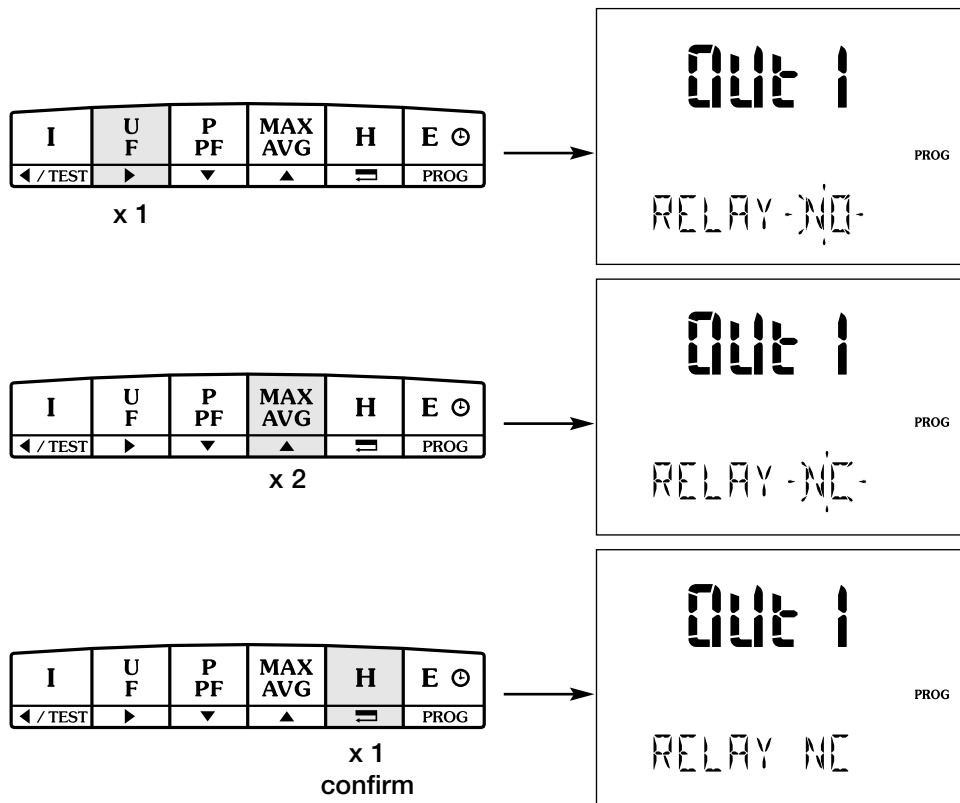
N° 1 OUTPUT RELAY HYSTERESIS - Example: HYST = 20 %



N° 1 OUTPUT RELAY TIME DELAY - Example: TEMPO = 30s

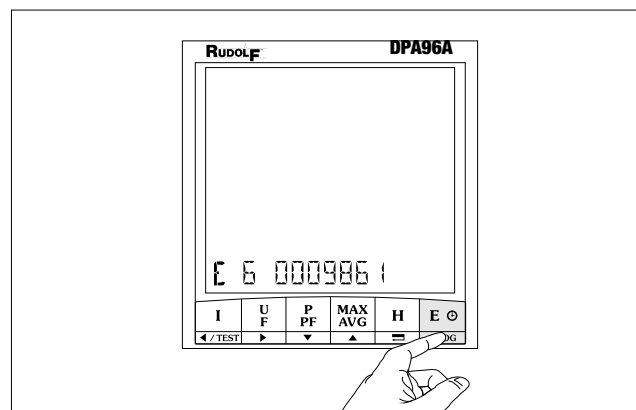
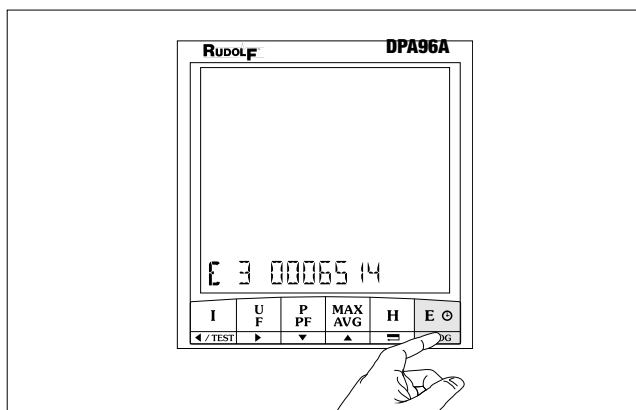
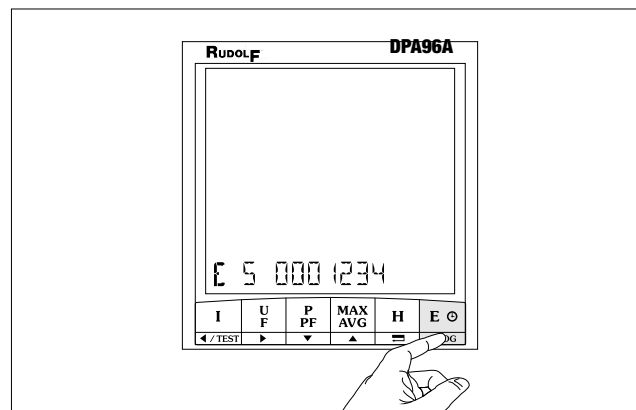
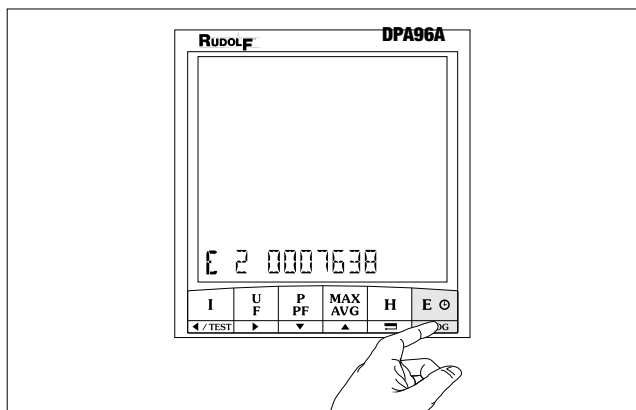
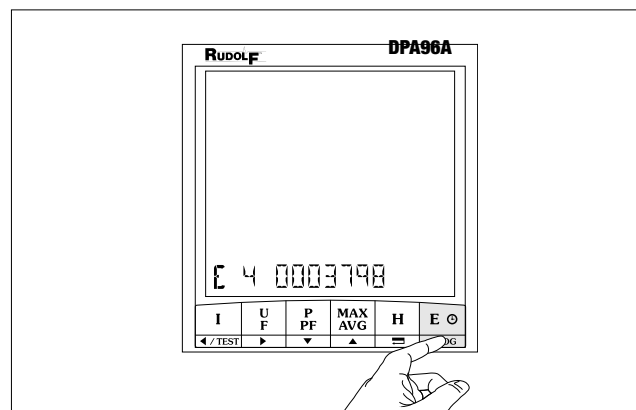
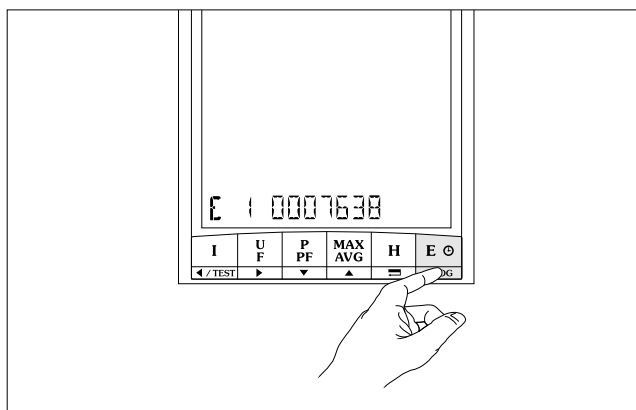


N° 1 OUTPUT RELAY RUN MODE - Example: RELAY = NC



PROGRAMMING RELAY OUTPUTS N°S 2 - 3 - 4 - 5 - 6- Proceed as for number 1 relay output.

OPERATION



TECHNICAL CHARACTERISTICS

Relay outputs

Relay	max. 230 V AC – 5 A – 1150 VA
N° of operations	$\leq 10^5$
Galvanic insulation	2.5 kV
Response time	1s
Certification	
UL 61010-1	N° file : E25 7746

Optocoupler inputs

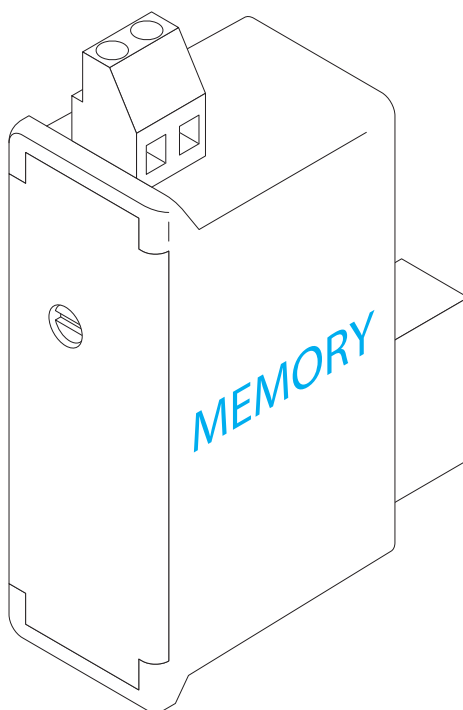
Max. direct voltage	30 V DC
Min. direct voltage	10 V DC
Max. inverse voltage	30 V DC
Galvanic insulation	3 kV
Min. pulse duration	10 ms
Max number of operations	10^8

GLOSSARY OF ABBREVIATIONS

Out 1 A-Cd... Out 6 A-Cd	Relay outputs 1 to 6
In1 ... In 2	Optocoupler inputs 1 to 6
TYPE	Output relays allocation
CDE	Relay status control via RS 485
I	Current I1, I2, I3
In	Neutral current
U	Phase-to-phase voltage U12, U23, U31
V	Phase-to-neutral voltage V1, V2, V3
$\Sigma P+$	Total positive active power
$\Sigma P-$	Total negative active power
$\Sigma Q+$	Total positive reactive power
$\Sigma Q-$	Total negative reactive power
ΣS	Total effective power
F	Frequency
ΣPFL	Power factor (lagging)
ΣPFC	Power factor (leading)
THD I	Current harmonic distortion (phases)
THD In	Current harmonic distortion (neutral)
THD U	Phase-to-phase harmonic distortion
THD V	Phase-to-neutral harmonic distortion
HOUr	Hour meter
CD-t	Relay status control via RS 485 with return to unenergised state
Out 1 Ht...Out 6 Ht	Alarm upper threshold
Out 1 Lt ... Out 6 Lt	Alarm lower threshold
/	Value displayed (e.g. : A = Amps)
K	Kilo (e.g. : kA = kilo amps)
M	Mega (e.g. : MA = mega amps)
Out 1 HYST ... Out 6 HYST	Hysteresis from 0 to 99%
Out 1 TEMPO ... Out 6 TEMPO	Relay switching time delay from 0 to 999 s.
Out 1 RELAY ... Out 6 RELAY	Unenergised output relay
NC	Relay normally off
NO	Relay normally on

R-DPA96 A/AN - R-Module 7

MEMORY



WARNING

Caution: There is a risk of explosion if the battery is replaced with a battery of the incorrect type. Dispose of used batteries in line with the instructions.

PRELIMINARY OPERATIONS

Check the following points as soon as you receive the optional module package:

- the packing is in good condition,
- the product has not been damaged during transit,
- the product reference number conforms to your order,
- the package contains the product,
- the operating instructions.

PRESENTATION

This optional module must be connected to the R-DPA96 A/AN (ref. 4825 0A40, 4825 0A41, 4825 1A40, 4825 1A41). It offers the following functions via the RS485 JBUS/MODBUS communication interfaces :

- 31-day storing of P+, P-, Q+, Q- with a 10-minute internal / external synchronisation signal. This signal can be set to 5, 8, 10, 15, 20, 30 and 60 minutes. Storing of the above values can be done over a 62-day period if saving a single active or reactive power value.
- Storing the last 10 date-stamped alarms (date/hour, duration, minimum and maximum values).
- Storing the last min./max. instantaneous values for 3U, 3V, 3I, In, F, $\Sigma P+/-$, $\Sigma Q+/-$, ΣS , THD3U, THD3V, THD 3I, THD In.
- Stamp-dated storing of the 10 last :
 - voltage dips from 5% to 95% of Un (as per IEC 61000-4-30 and EN 50160) with 10 ms tripping time.
 - Transient overvoltage from 105% to 150% of Un (voltage surges) from a 10 ms build-up time.
 - Voltage cut-offs from a value less than 5% of Un.
- Storing of mean values according to synchronisation signal for 3U, 3V (1 day in 10 minutes) and F (60 days in 10 minutes).

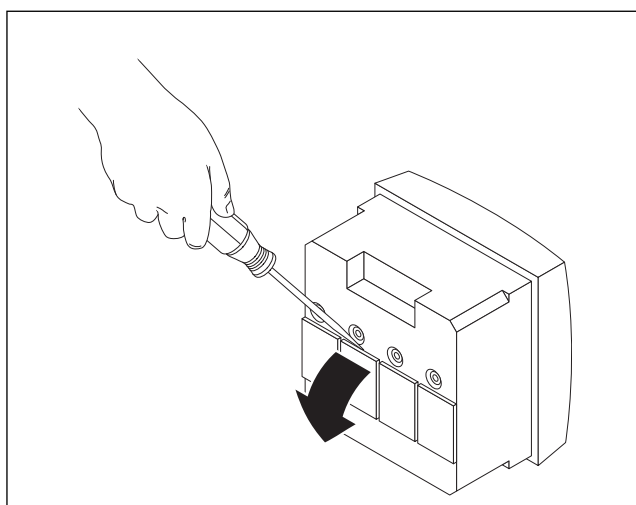
INSTALLATION

CONNECTION



This R-DPA96 A/AN must be switched off.

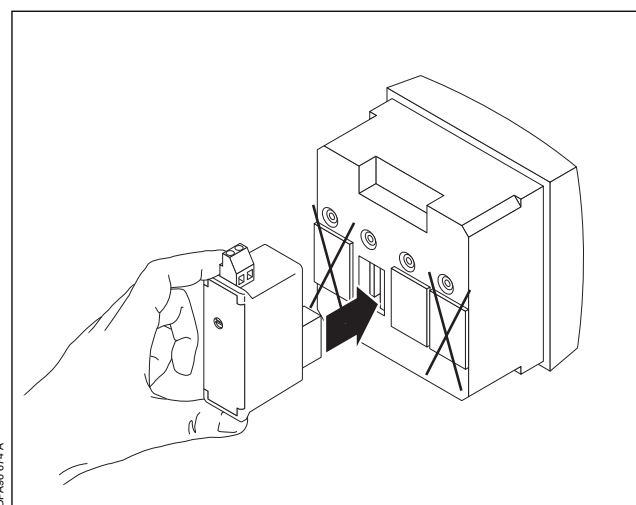
1



DPA96 342 A

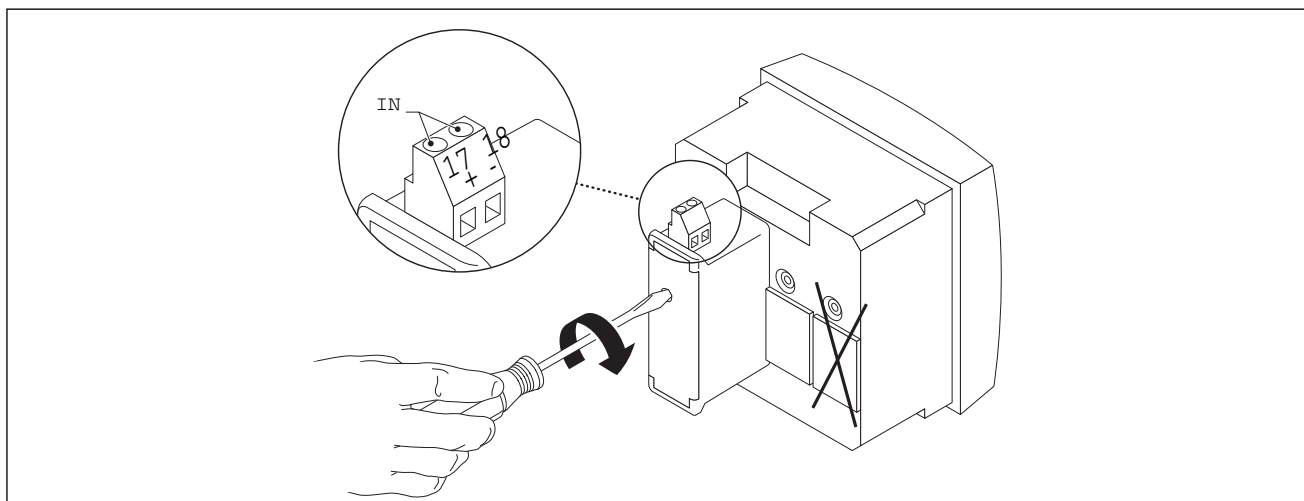
2

Fix the module on the slot 2 or 3



DPA96 674 A

3



DPA96 675 A

PROGRAMMING

I	U F	P PF	MAX AVG	H	E	⊙
◀ / TEST ▶	▶	▼	▲	≡	PROG	



I	U F	P PF	MAX AVG	H	E	⊙
◀ / TEST ▶	▶	▼	▲	≡	PROG	



I	U F	P PF	MAX AVG	H	E	⊙
◀ / TEST ▶	▶	▼	▲	≡	PROG	



I	U F	P PF	MAX AVG	H	E	⊙
◀ / TEST ▶	▶	▼	▲	≡	PROG	



I	U F	P PF	MAX AVG	H	E	⊙
◀ / TEST ▶	▶	▼	▲	≡	PROG	



I	U F	P PF	MAX AVG	H	E	⊙
◀ / TEST ▶	▶	▼	▲	≡	PROG	



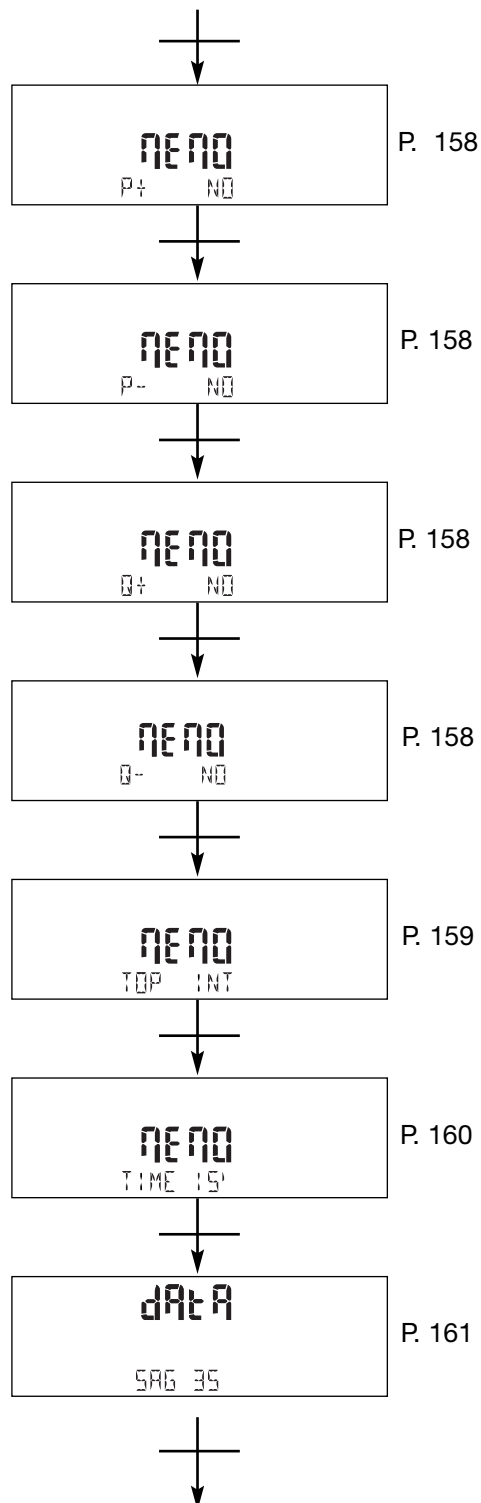
I	U F	P PF	MAX AVG	H	E	⊙
◀ / TEST ▶	▶	▼	▲	≡	PROG	

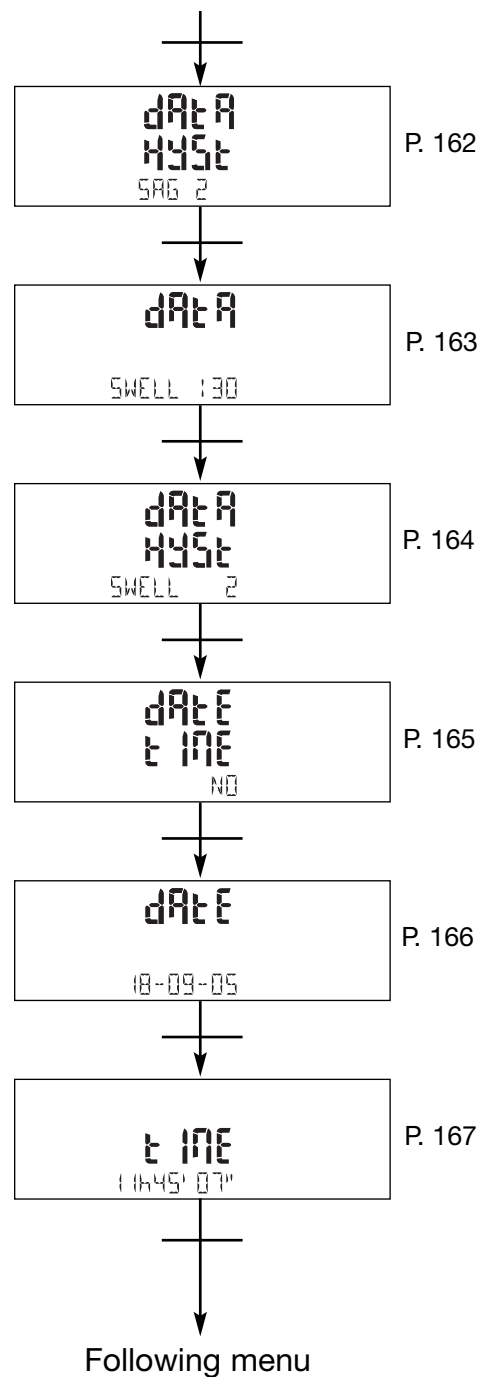
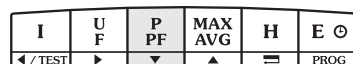
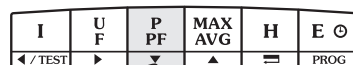
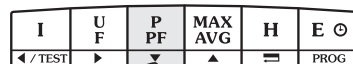
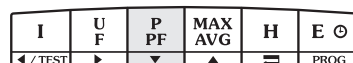
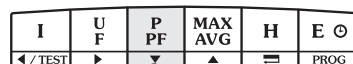
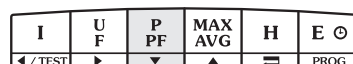


I	U F	P PF	MAX AVG	H	E	⊙
◀ / TEST ▶	▶	▼	▲	≡	PROG	



Previous menu





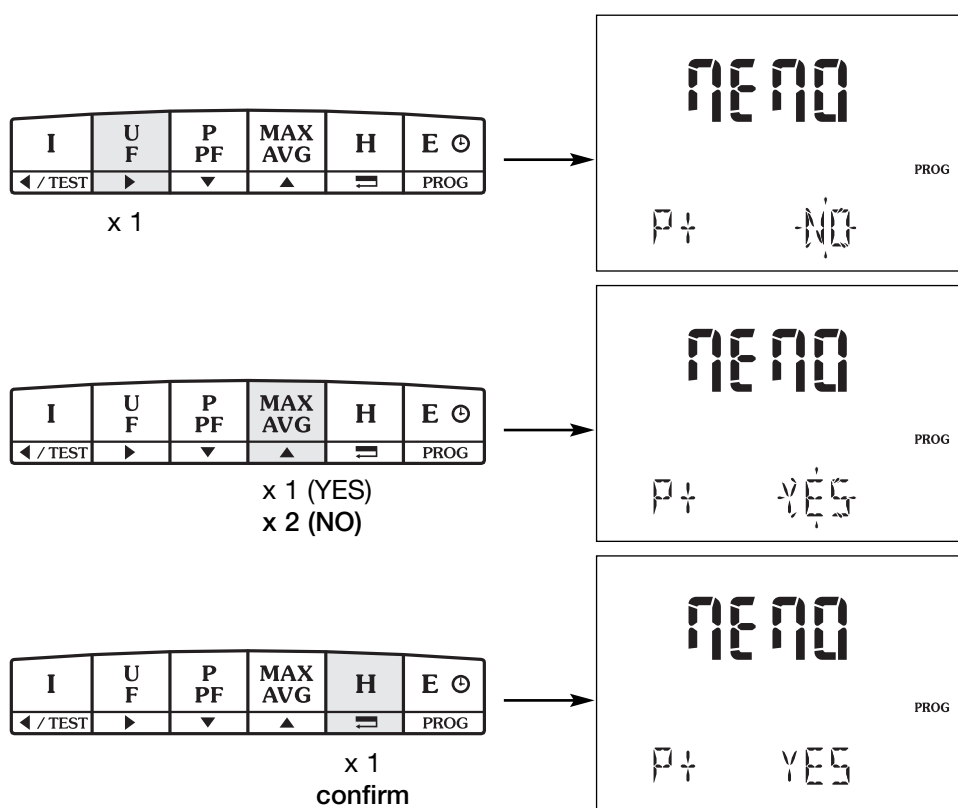
PROGRAMMING

SAVING ACTIVE POWER CONSUMPTION DEMAND - Example: MEMO P+ = YES

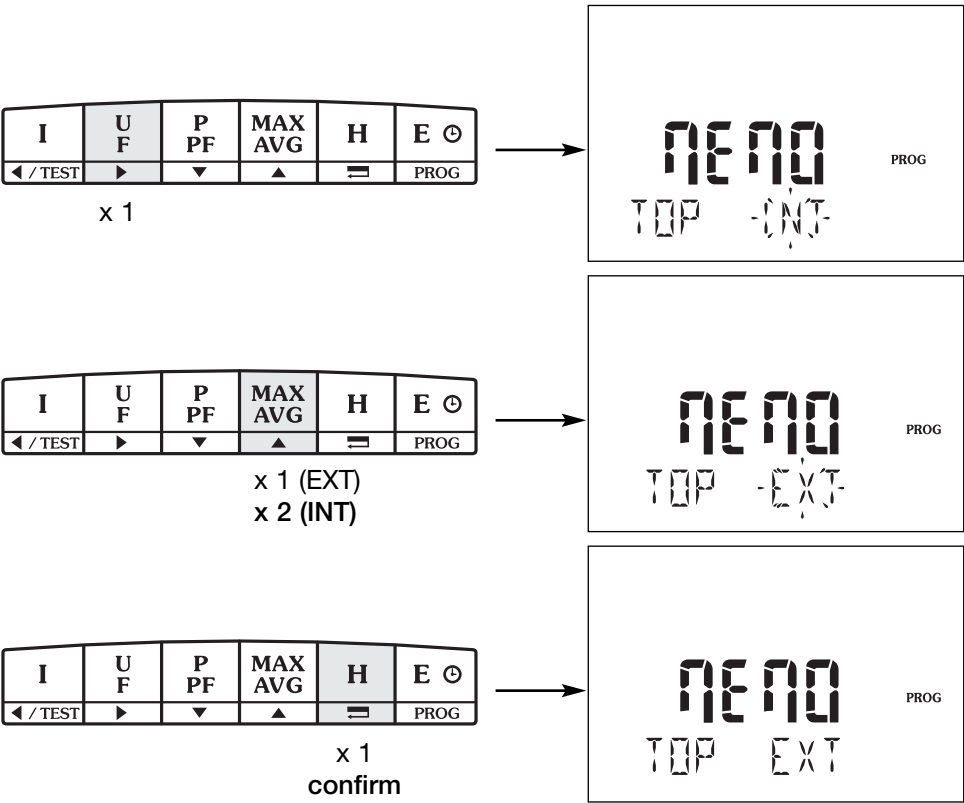
NB:

Proceed in the same way for P-, Q+, and Q-.

- 31-day storing of P+, P-, Q+, Q- with a 10-minute internal / external synchronisation signal. Storing of the above values can be done over a 62-day period if saving a single active or reactive power value.

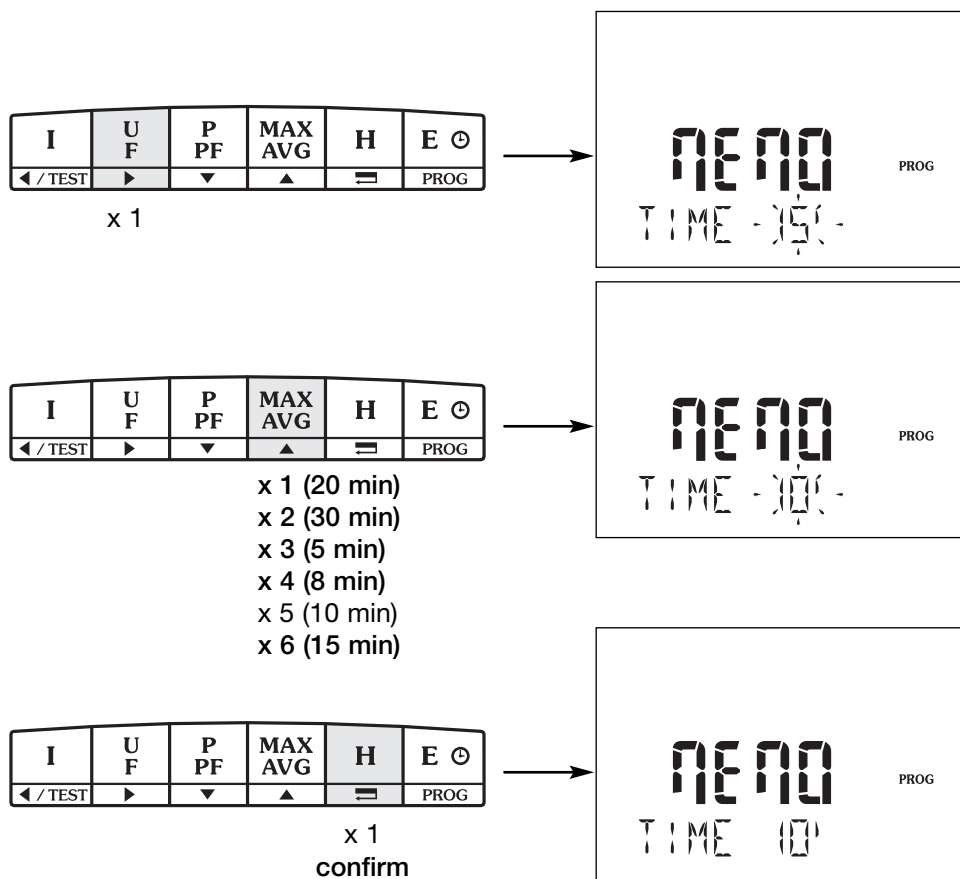


INTERNAL / EXTERNAL SYNCHRONISATION MODE - Example: MEMO TOP = EXT



PROGRAMMING

SYNCHRONISATION SIGNAL - Example: MEMO TIME = 10'



DEFINING VOLTAGE DIPS, SURGES AND CUT-OFFS

Voltage dips and overvoltage (voltage surges) are stored as per IEC161000-4-30 and EN50160 with a Class B measurement method

> Voltage dips

The voltage dips threshold can be set to between 5% and 95 % of the reference voltage value. Likewise, the dip is considered as terminated when it passes over the dip threshold, plus the voltage hysteresis.

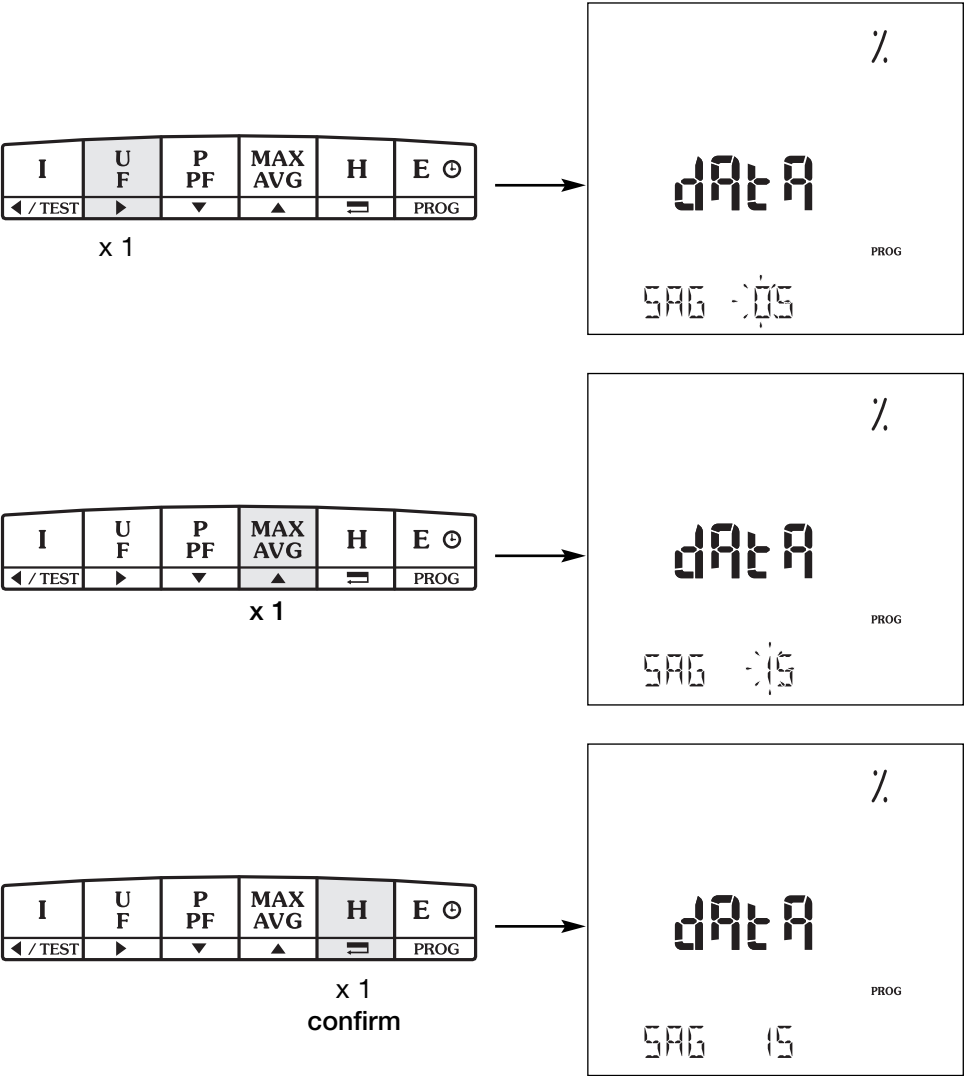
> Overvoltage

The overvoltage threshold can be set to 105%-150% of the reference voltage value. The overvoltage is terminated when it is under the dip threshold, less the voltage hysteresis

> Voltage cut-offs

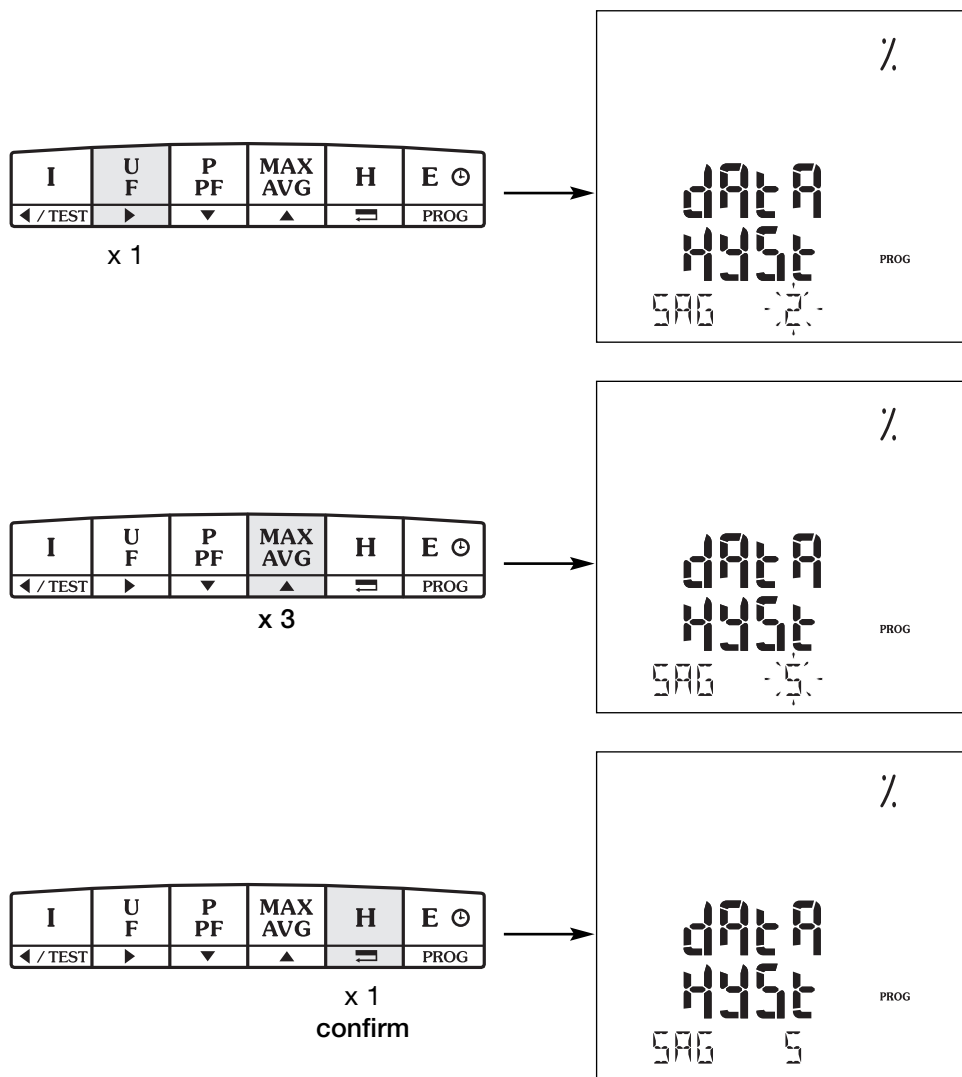
It is considered that there is a voltage cut-off if one of the phases is lower than minimum of measurement of Dpa96 (see Dpa96 technical characteristics).

VOLTAGE DIP THRESHOLD (SAG)- Example: dAtA SAG = 15%

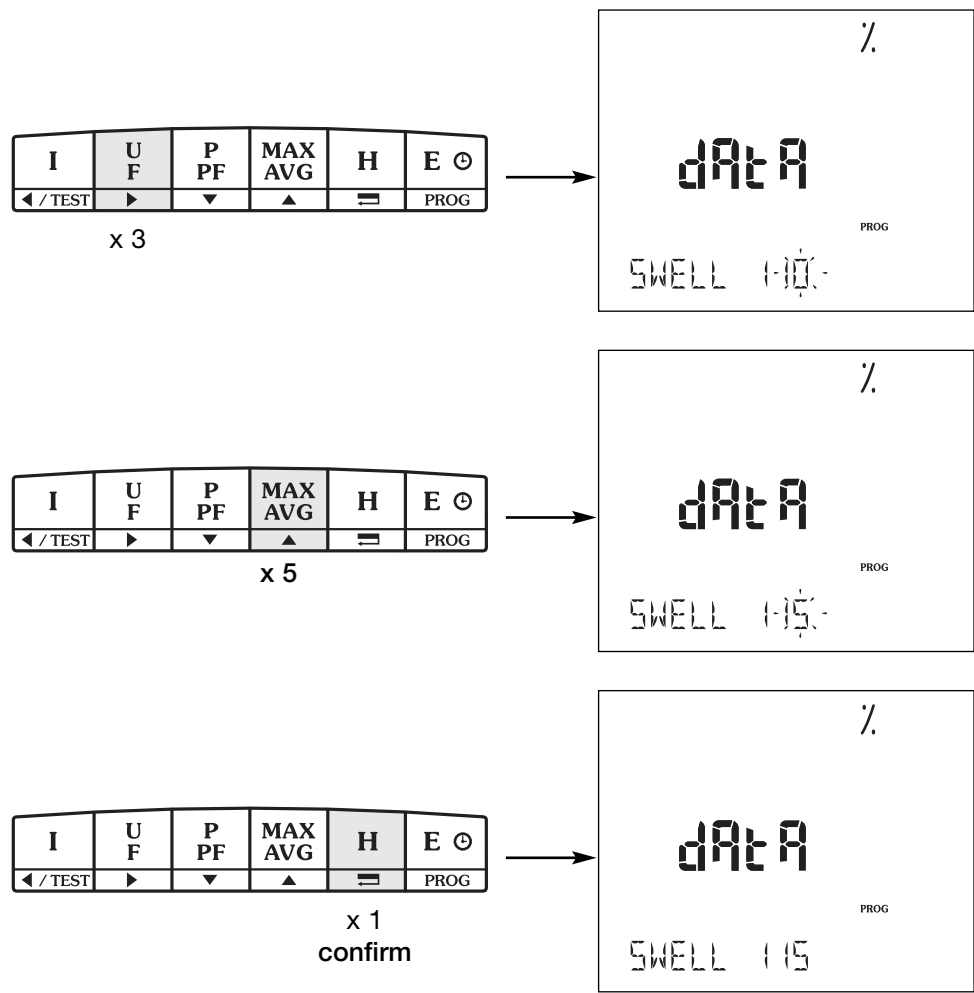


PROGRAMMING

VOLTAGE DIP HYSTERESIS - Example: dAtA HySt SAG = 5%

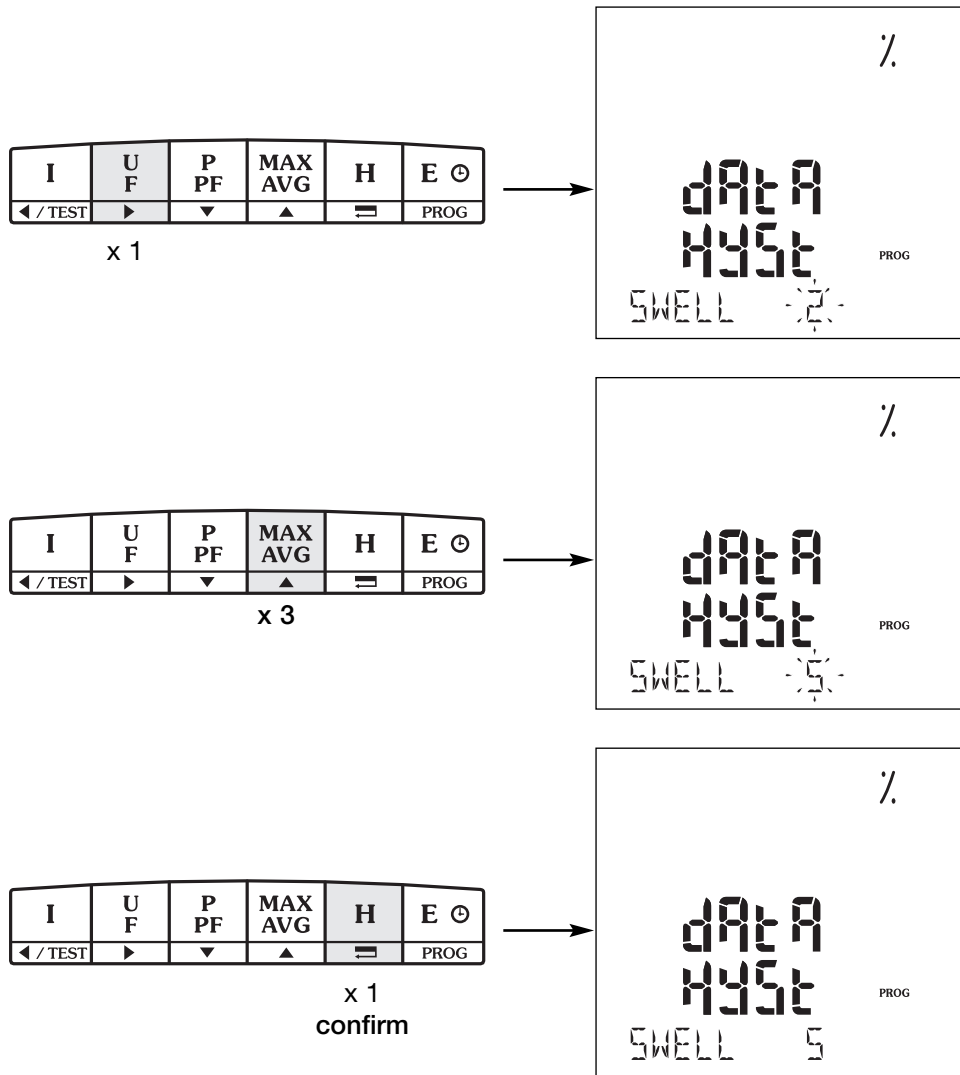


OVERVOLTAGE THRESHOLD (SWELL) - Example: dAtA SWELL = 115 %

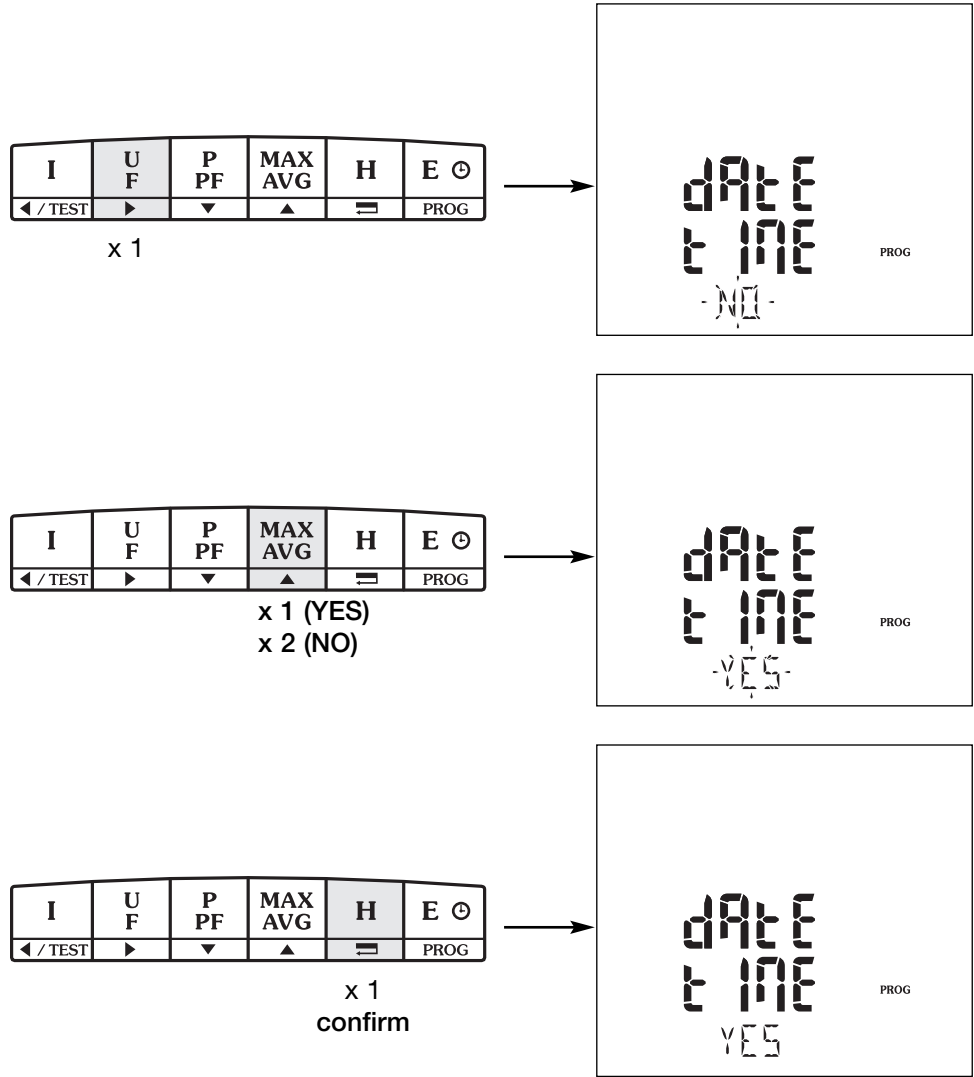


PROGRAMMING

OVERVOLTAGE HYSTERESIS - Example: dAtA HySt SWELL = 5%

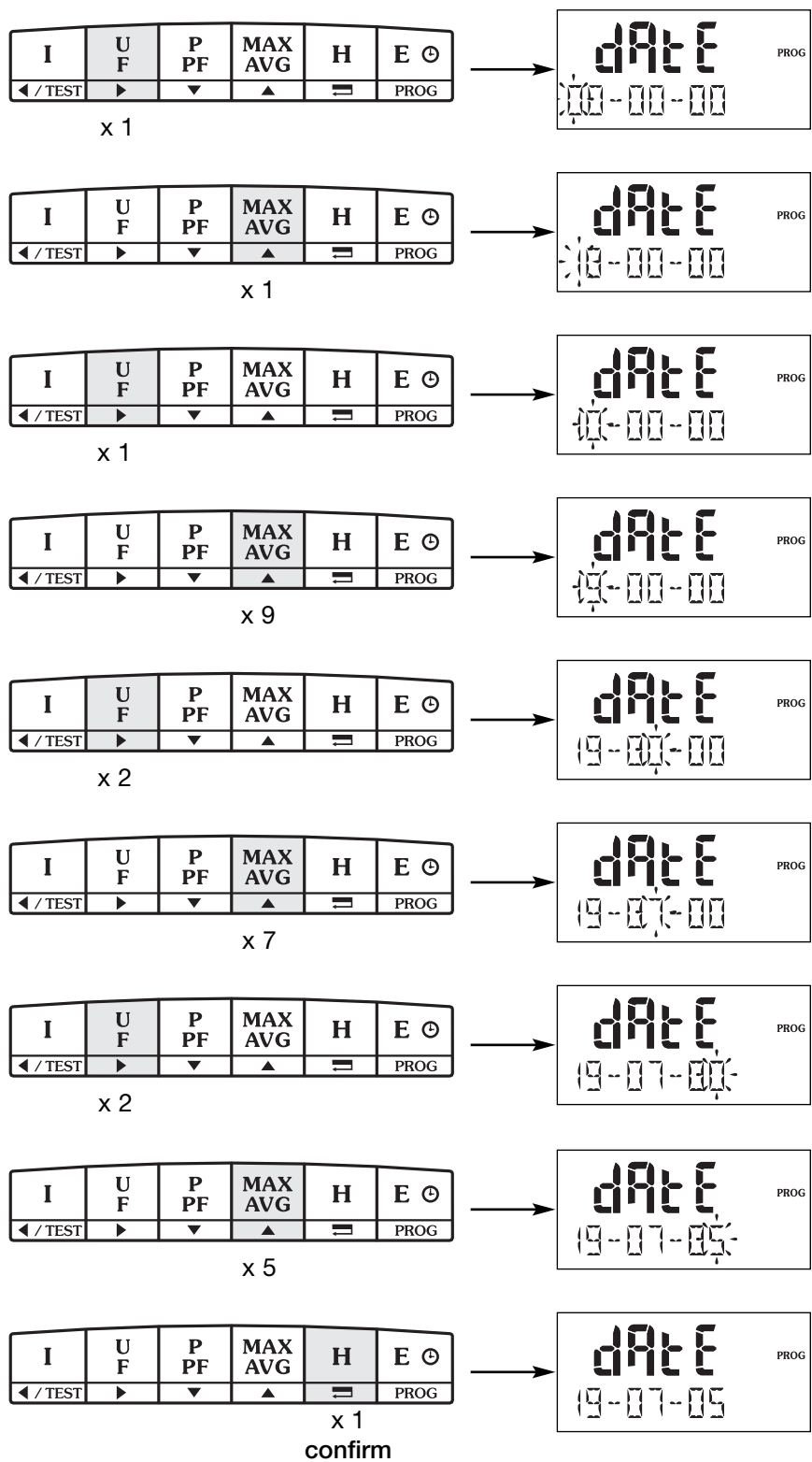


ACTIVATING DATE / HOUR FUNCTION - Example: dAtE tIME = YES

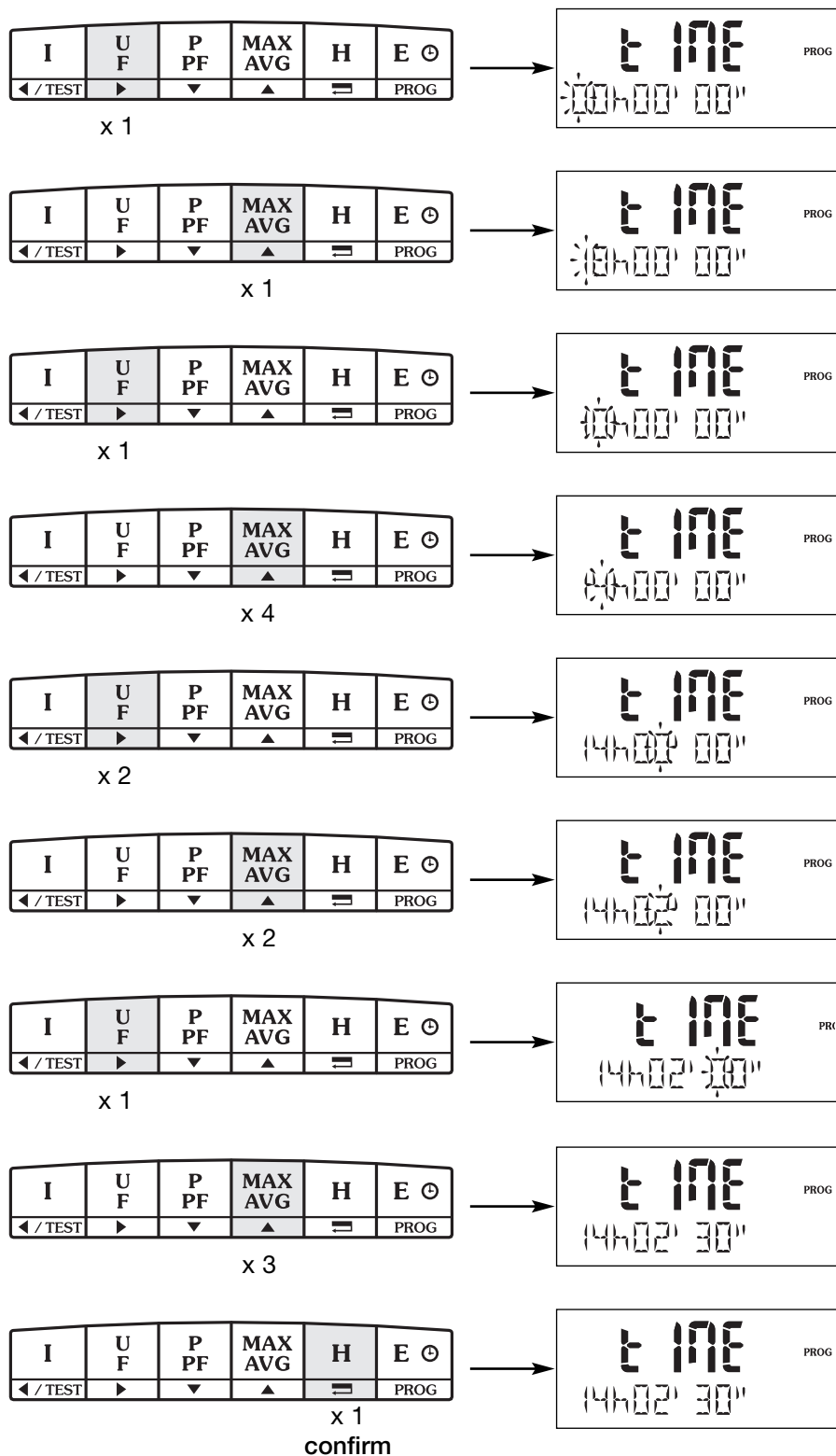


PROGRAMMING

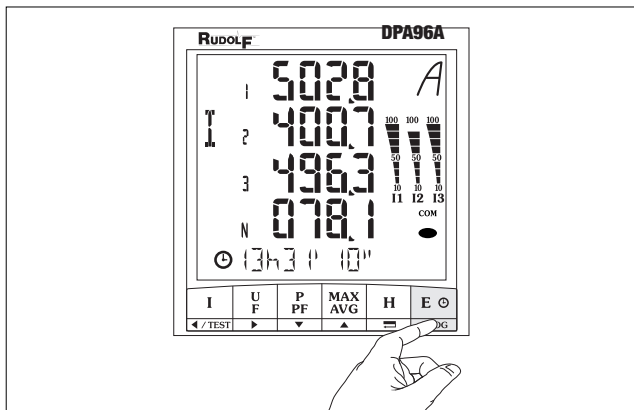
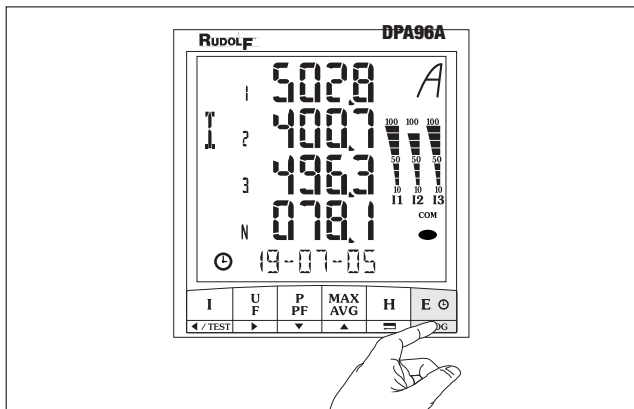
DATE SETTINGS - Example: dAtE = 19-07-05



HOUR SETTINGS - Example: tIME 14h02'30"



OPERATION



TECHNICAL CHARACTERISTICS

Optocoupler input		
Max. direct voltage		30 V DC
Min. direct voltage		10 V DC
Max. inverse voltage		30 V DC
Galvanic insulation		3 kV
Min. pulse duration		1s
Max number of operations		10 ⁸
Memory size		512 ko
Certification		
UL 61010-1		N° file : E25 7746

GLOSSARY OF ABBREVIATIONS

MEMO	Memory module
P+	Positive power consumption demand
P-	Active power consumption demand
Q+	Positive reactive power consumption demand
Q-	Negative reactive power consumption demand
YES	Yes
NO	No
TOP	Synchronisation signal
INT	Internal
EXT	External
tIME	Synchronisation period
dAtA	Event storing
SAG	Voltage dip
HySt	Hysteresis
SWELL	Overvoltage
dAtE	days / months / years
tIME	hours / minutes / seconds

The brand that adds value to every solution.



DPA96A/AN

RUDOLF - Ref.: 876 583 A - 09/05

47 Yishun Industrial Park A Singapore 768724 SINGAPORE
Tel : (65) 6756 0833 Fax : (65) 6756 2007
<http://www.bridex.com.sg> E-mail: sales@bridex.com.sg

RUDOLF™ brandname is the registered trademark of Bridex Singapore Pte Ltd (a member of SMB United Groupe) in Singapore and other countries. Our policy is one continuous development and we therefore reserve the right to alter technical data without prior notice.